

# CONSTRUCTION PHASE 1 FOR KALAS FALLS SITUATED AT ROLESVILLE ROAD, ROLESVILLE WAKE, NORTH CAROLINA

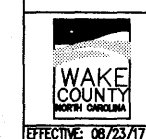
EROSION AND SEDIMENT CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT APPROVED

EROSION CONTROL  SEC-047126-2020

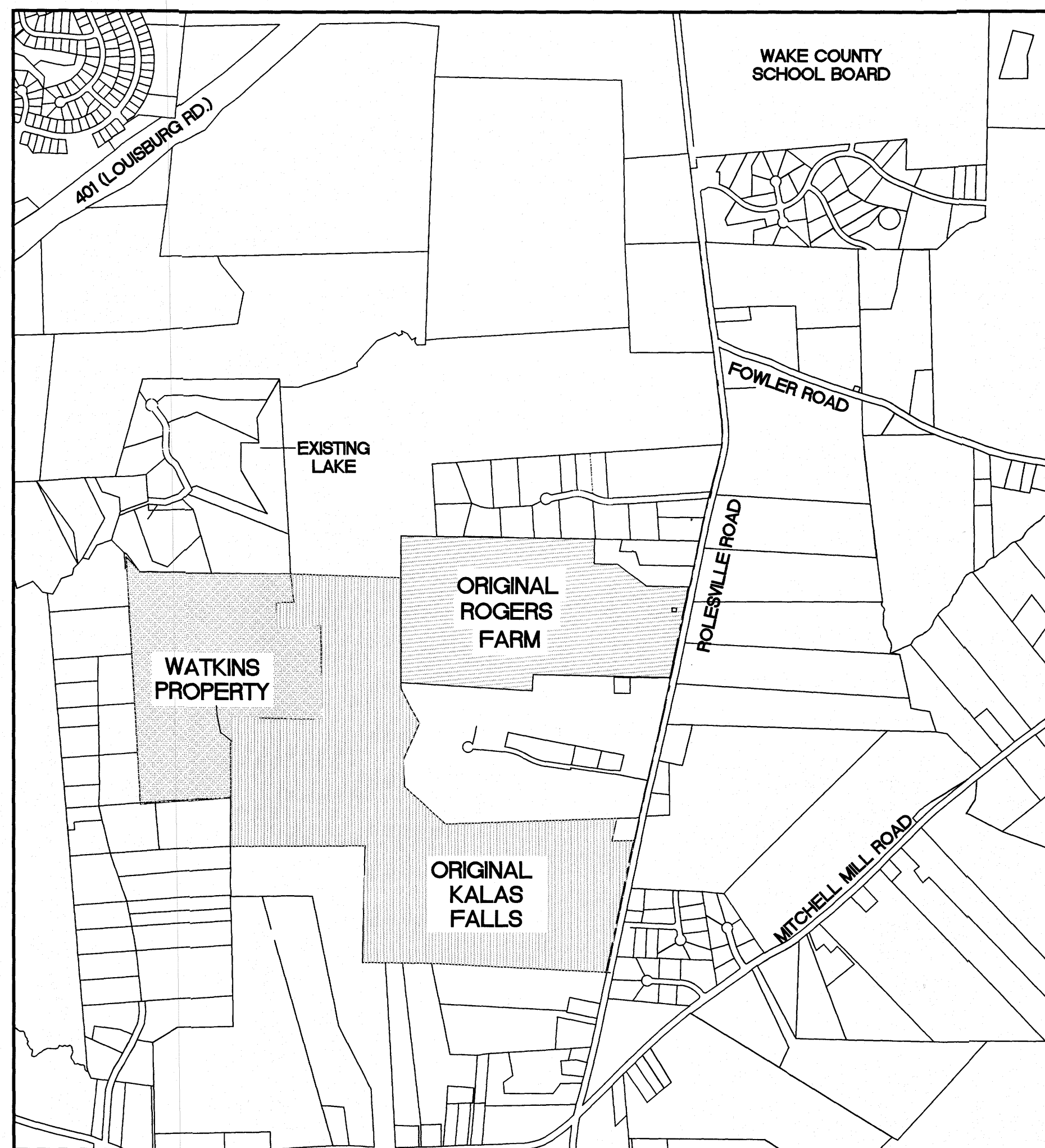
STORMWATER MGMT.  SWF-047129-2020

FLOOD STUDY

DATE 01/26/2021



ENVIRONMENTAL CONSULTANT SIGNATURE



VICINITY MAP  
SCALE: 1"=1000'

THESE IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE FOLLOWING DRAWINGS AND THE STANDARD SPECIFICATIONS OF THE CITY OF RALEIGH, WAKE COUNTY, AND NCDOT.

**PROJECT NARRATIVE**

THIS PROJECT IS LOCATED IN ROLESVILLE, NORTH CAROLINA AT ROLESVILLE ROAD. IT INVOLVES THE COMBINING OF SEPARATELY PROPOSED PROJECTS KNOWN AS KALAS FALLS, ROGERS FARM AND ONE OTHER TRACT KNOWN AS THE WATKINS PROPERTY. IT DRAINS TO TRIBUTARIES OF HARRIS BRANCH WHICH IS PART OF THE NEUSE RIVER BASIN. IT IS ALSO BOUNDED ON ALL SIDES BY MOSTLY UNDEVELOPED LAND. IT IS APPROXIMATELY 0.5 MILES NORTHWEST OF THE INTERSECTION OF MITCHELL MILL ROAD AND ROLESVILLE ROAD IN WAKE COUNTY, NORTH CAROLINA. THE TOTAL AREA OF THE PROJECT IS 282.726(EXCLUDES EXISTING ROW AND CEMETERY) ACRES. THE CURRENT PHASE IS 83.66 ACRES.

**ATTENTION CONTRACTORS:**

THE CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER, SEWER, AND / OR REUSE, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4540 AT LEAST TWENTY FOUR HOURS PRIOR TO BEGINNING ANY OF THEIR CONSTRUCTION.

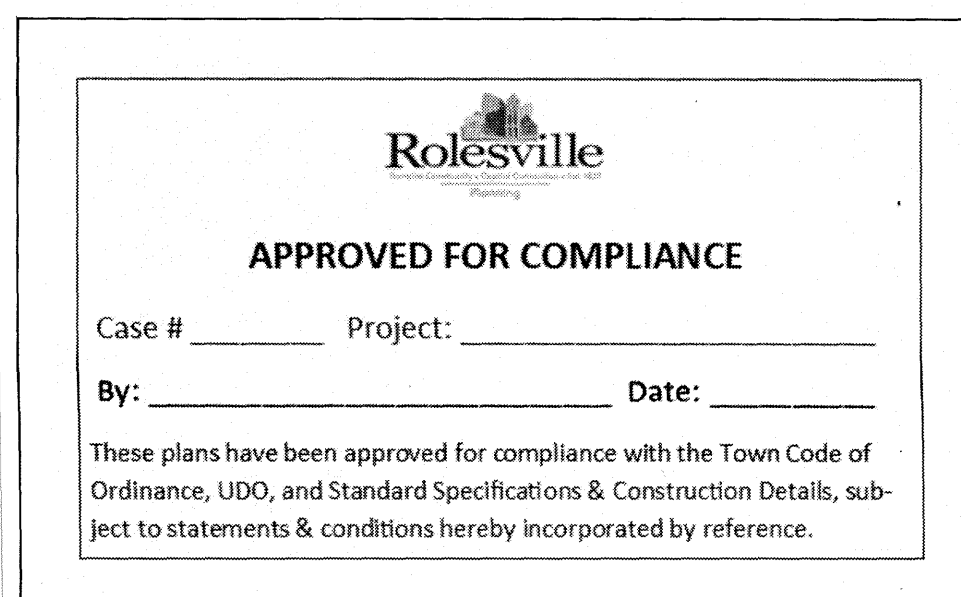
FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION, WILL RESULT IN THE ISSUANCE OF MONETARY FINES, AND REQUIRE REINSTALLATION OF ANY WATER AND SEWER FACILITIES NOT INSPECTED AS A OF THE NOTIFICATION FAILURE.

FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF THE CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

**GENERAL NOTES:**

- ALL PUBLIC WATER AND SEWER MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF RALEIGH STANDARDS AND SPECIFICATIONS.
- CONTRACTOR SHALL CONTACT 811 (1-800-632-4949) TO LOCATE ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION.
- CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE EXISTING UTILITIES AND NOTIFY THE PROJECT ENGINEER (919-469-1101) OF ANY CONFLICTS.
- ALL BOUNDARY AND FIELD TOPOGRAPHY PROVIDED BY WITHERS & RAVENEL.
- ALL CONDITIONS OF SUP 19-01 AND MA 19-02 R&PUD ARE APPLICABLE AND WILL BE MET.

PUBLIC IMPROVEMENTS PHASE 1	
PUBLIC WATER (12")	3,719 LF
PUBLIC WATER (8")	723.67 LF
PUBLIC WATER (6")	556.31 LF
PUBLIC SEWER (12")	1,453 LF
PUBLIC SEWER (8")	8,483.28 LF
PUBLIC SEWER (6")	8,202.99 LF
ROAD WIDENING	2,411 LF
TOTAL NO. OF LOTS	129
TOTAL DISTURBED AREA	33.78 AC



SHEET INDEX	
CVR	COVER SHEET Updated
1.0	OVERALL EXISTING CONDITIONS
1.1-1.2	EXISTING CONDITIONS PHASE 1
2.0-2.1	EROSION CONTROL STAGE 1
2.2-2.7	EROSION CONTROL(50 SCALE)
3.0	GENERAL NOTES AND LEGENDS
3.1	SCHEDULE PLAN Updated
4.0	DRAINAGE PLAN OVERALL
4.1-4.6	GRADING & DRAINAGE PHASE 1 (50 SCALE) Updated 4.1 & 4.6
4.7	SCM 1A DETAIL
4.8	SCM 2A DETAIL
4.9	SCM 2B DETAIL
4.10	SCM 3D DETAIL
4.11	SCM 3E DETAIL
5.0	SITE PLAN OVERALL
5.1	SITE PLAN PHASE 1 OVERALL Updated
5.2-5.7	SITE PLAN PHASE 1 (50 SCALE) Updated 5.2 & 5.5
6.0	OVERALL UTILITIES PLAN Updated
6.1-6.6	UTILITY SHEET (50 SCALE) Updated 4.1 & 4.6
7.0-7.2	FALLS BLUFF DR PLAN AND PROFILE
8.0	DARTFORD GREEN PLACE AND OUTFALL A PLAN AND PROFILE
9.0	STONERIDGE BARN WAY PLAN AND PROFILE
10.0	HILL TOP CREST CT AND OUTFALL D PLAN AND PROFILE
11.0	TANSELY CREST LOOP (E) PLAN AND PROFILE
12.0	TANSELY CREST LOOP (W) PLAN AND PROFILE
13.0	FRIENDLY MILL LANE & OUTFALL E PLAN AND PROFILE
14.0	SANITARY SEWER OUTFALL A PLAN AND PROFILE
15.0	SANITARY SEWER OUTFALL C PLAN AND PROFILE
16.0	SANITARY SEWER OUTFALL G PLAN AND PROFILE (10+00-17+51.82)
17.0	SANITARY SEWER OUTFALL G PLAN AND PROFILE (17+51.82-24+52.54)
18.0	ROLESVILLE RD SOTHERN SECTION EXISTING & IMPROVEMENTS
18.1	ROLESVILLE RD NORTHERN SECTION EXISTING & IMPROVEMENTS
18.2	ROLESVILLE RD OFF-SITE STORM PLAN AND PROFILE
18.3	ROLESVILLE RD OFF-SITE STORM PLAN AND PROFILE
19.0	ROLESVILLE RD IMPROVEMENTS
20.0	TRANSPORTATION PLAN
X1	CROSS-SECTION STA: 9+57.35 - 11+50
X2	CROSS-SECTION STA: 12+00 - 14+00
X3	CROSS-SECTION STA: 14+50 - 16+50
X4	CROSS-SECTION STA: 17+00 - 19+00
X5	CROSS-SECTION STA: 19+50 - 21+50
X6	CROSS-SECTION STA: 22+00 - 22+50
X7	CROSS-SECTION STA: 37+50 - 39+00
X8	CROSS-SECTION STA: 39+50 - 41+50
X9	CROSS-SECTION STA: 42+00 - 44+00
X10	CROSS-SECTION STA: 44+50 - 46+50
X11	CROSS-SECTION STA: 47+00
CD1-CD5	EROSION CONTROL DETAIL
CD6-CD8	WATER DETAIL
CD9-CD11	SANITARY SEWER DETAIL
CD12-CD19	STORM DETAIL
	KALAS FALLS OS1 LANDSCAPE PLAN EXHIBIT NEW

PROPERTY OWNER: PHASE 1	DR HORTON INC. CENTRAL CAROLINA DIVISION CONTACT: MIKE BROWN 7208 FALLS OF NEUSE ROAD STE. 201 RALEIGH, NC 27615
PROPERTY OWNER: REMAINING PHASES	MITCHELL MILL ROAD INVESTORS LLC CONTACT: KARL BLACKLEY 105 WESTON ESTATES WAY CARY, NC 27513 919-481-3000
SURVEYOR:	WITHERS RAVENEL CONTACT: MATT TIMLIN 115 MACKENAN DRIVE CARY, NC 27511 919-469-3340
BUFFER/WETLAND:	WITHERS RAVENEL CONTACT: TROY BEASLEY 115 MACKENAN DRIVE CARY, NC 27511 919-469-3340

**SITE PERMITTING APPROVAL**

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the construction and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # 2-4899.

The City of Raleigh consents to the construction and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # W-3785.

The City of Raleigh consents to the construction to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit #

**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer

No.	DATE	REVISION	DWG/CHK	
			DESIGNER	CHECKER
1	6-14-2021	FINAL SET		
2	12-12-23	UPDATED PROPERTY OWNER		

**COVER SHEET**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**ROLESVILLE ROAD, ROLESVILLE**  
**WAKE COUNTY, NORTH CAROLINA**  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: EDS  
 DATE: 9/19/2019

**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 875 Walnut Street, Suite 360  
 Cary, NC 27511 919-469-1101






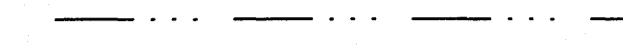
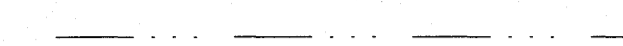
SHEET NO.  
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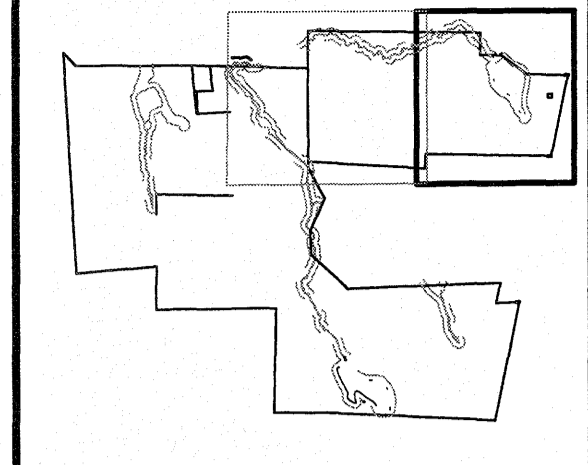




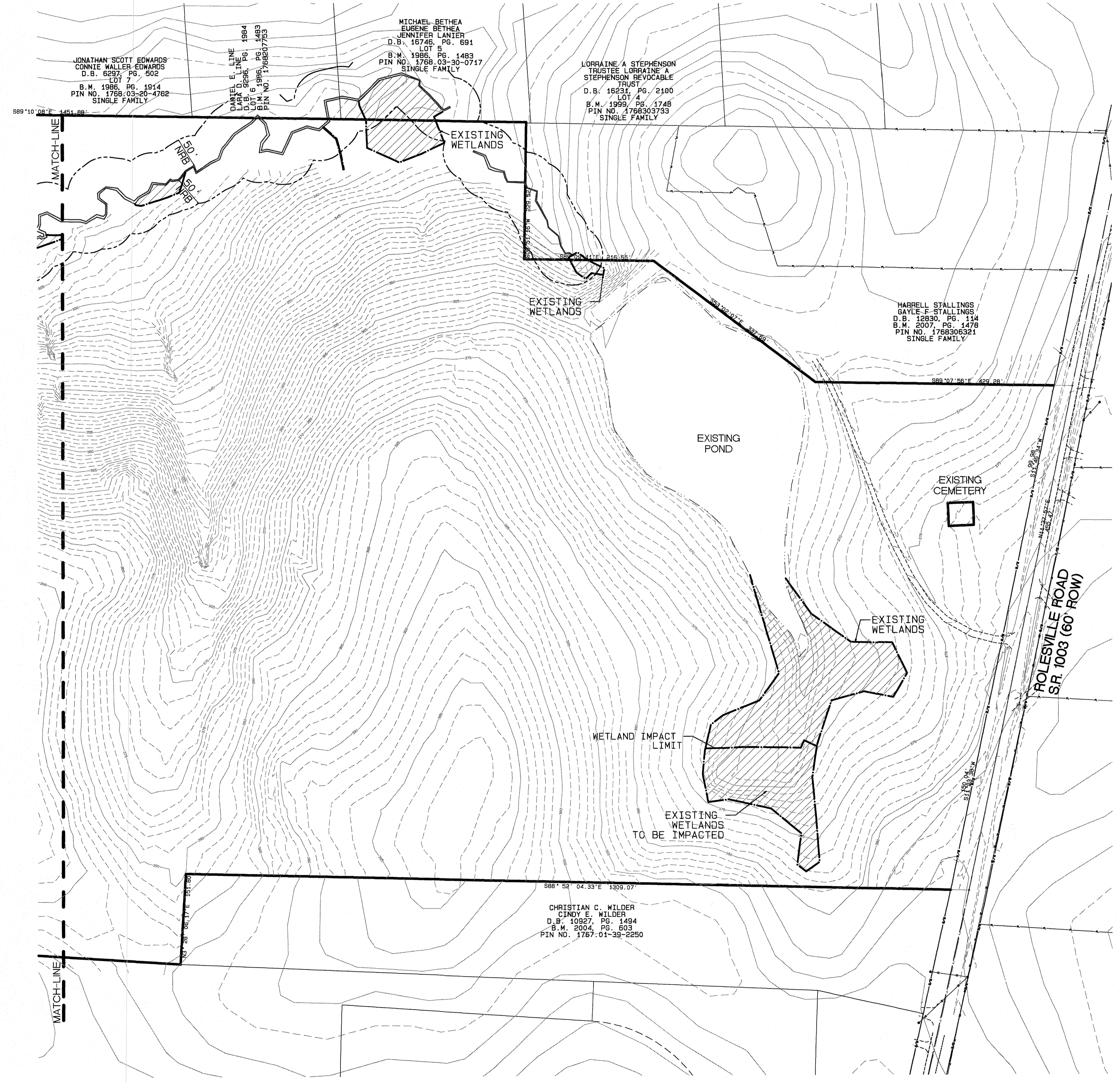


EXISTING LINETYPE LEGEND

-  PROPERTY BOUNDARY
-  EXISTING TREE LINE
-  EXISTING WETLAND
-  EXISTING 50' NRB
-  CENTERLINE OF STREAM
-  EXISTING WATER ELEVATION
-  EXISTING RIGHT OF WAY



SCALE: 1"=2000'



No.	DATE	REVISION
1	11-20-20	UPDATED WETLAND LIMITS LOCATED ON THE ORIGINAL ROBERTS FARM TRACT.
2	06-18-21	UPDATED ADJACENT PROPERTY OWNER INFORMATION

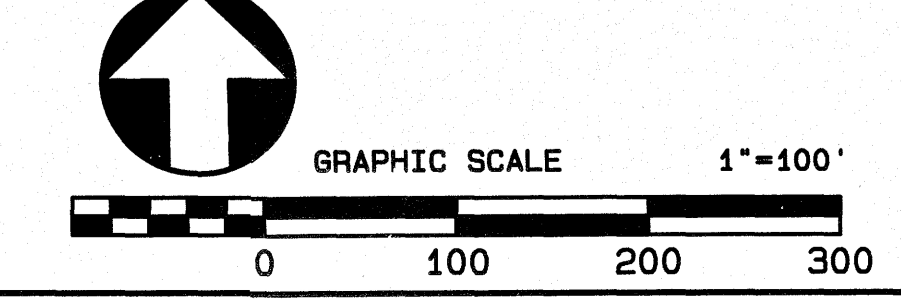
**EXISTING CONDITION PHASE 1**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: BAH  
 DRAWN BY: BAH  
 DATE: 9/19/2019

**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd, Suite 450  
 Raleigh, NC 27607 919-469-1101

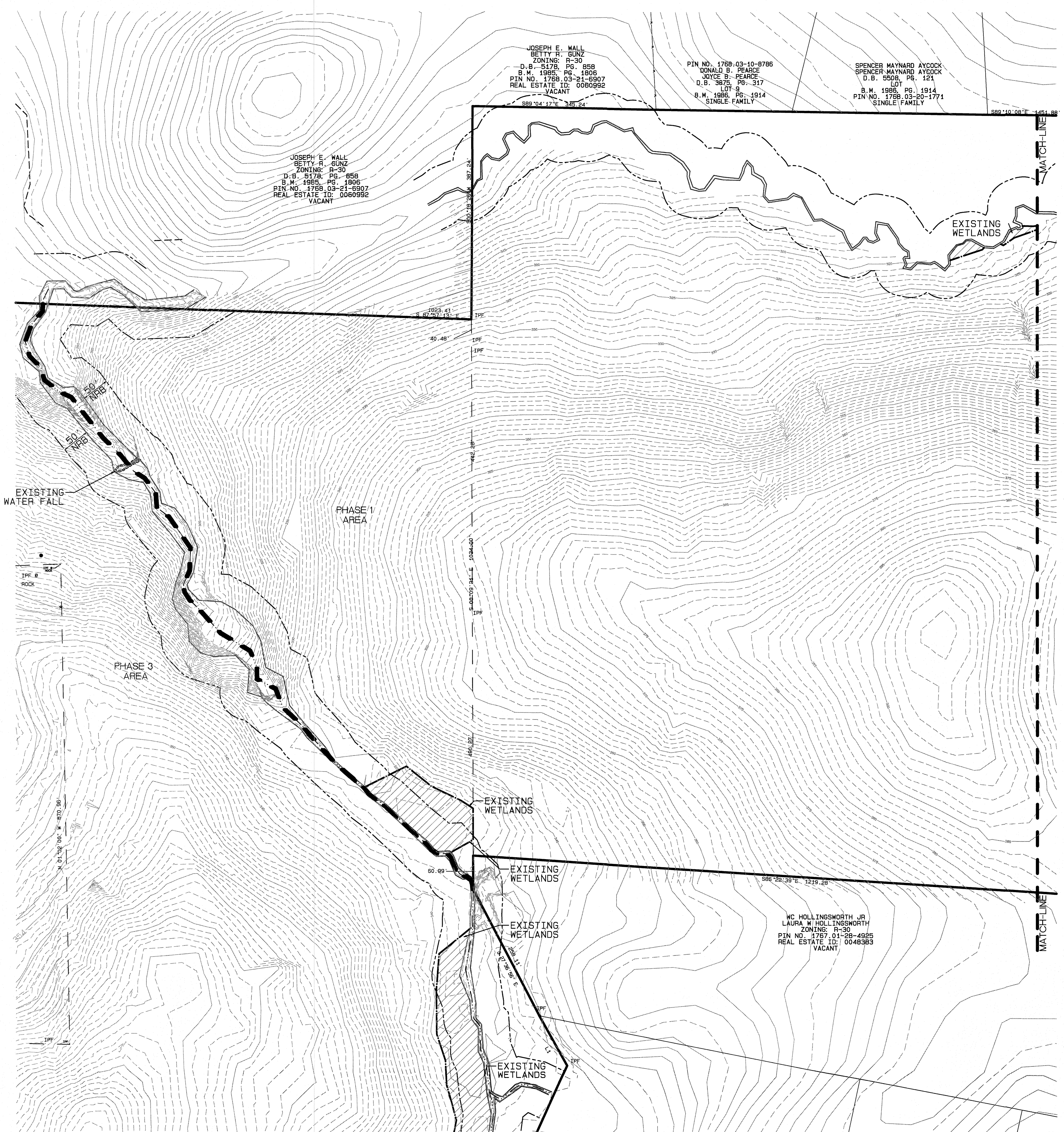
Professional Engineer Seal: JOHN R. HARRIS, 9810, 6-28-21

GENERAL NOTES:  
 1. TOPO SHOWN ON THIS SHEET IS 1' CONTOURS AND IS FIELD TOPOGRAPHY.



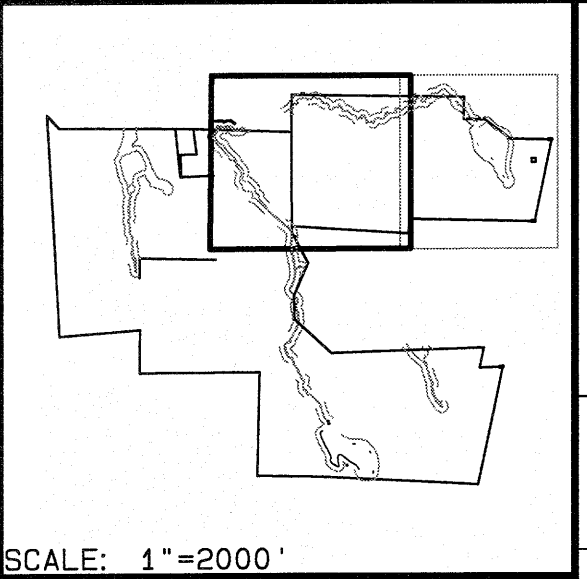
SHEET NO. **1.1**





EXISTING LINETYPE LEGEND

- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY
- PHASE-LINE



SCALE: 1"=2000'

NO.	DATE	REVISION	DRAWN/CHK
1	05-20-20	ISSUED FOR THE ORIGINAL ROBERTS FARM TRACT.	BAH/JRH
2	05-20-20	UPDATED WETLAND PROPERTY LINE INFORMATION	BAH/JRH
3	05-20-20	UPDATED WETLAND PROPERTY LINE INFORMATION	BAH/JRH

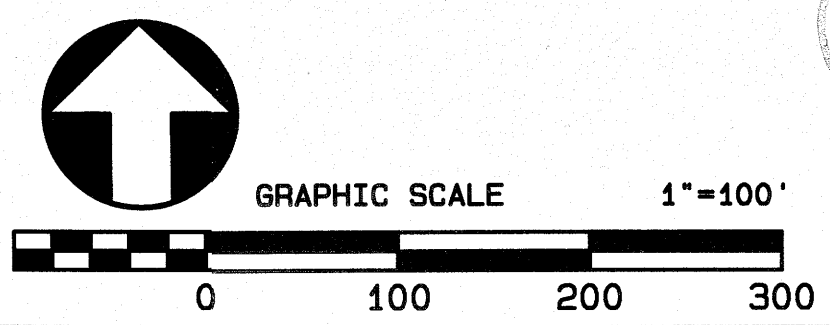
**EXISTING CONDITION  
PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 9/19/2019

**AMERICAN  
Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd, Suite 450  
Raleigh, NC 27607 919-469-1101

Plot Date: 6/19/2021 Time: 4:29PM  
FILE: Z:\Jobs\9900\Watkins Property\Map\Kallas Falls Base Phase 1.dwg  
  
 SHEET NO.  
**1.2**

GENERAL NOTES:  
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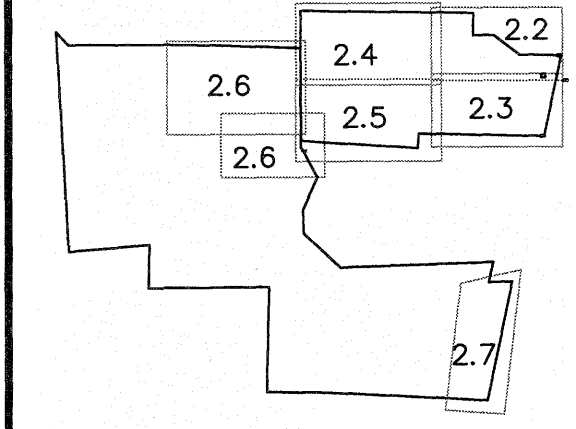


PROPOSED LINETYPE LEGEND

- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- ===== PROPOSED 30" CURB AND GUTTER
- PROPOSED EASEMENT
- SF-SF-SF-SF-SF- PROPOSED SILT FENCE
- TF-TF-TF-TF-TF- PROPOSED SILT FENCE/TREE FENCE
- ←←←←← PROPOSED SILT DITCH
- x-x-x-x-x- PROPOSED BAFFLES
- CL-CL-CL- PROPOSED CLEARING LIMITS
- TF-TF-TF- PROPOSED TREE FENCE

EXISTING LINETYPE LEGEND

- ===== PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY



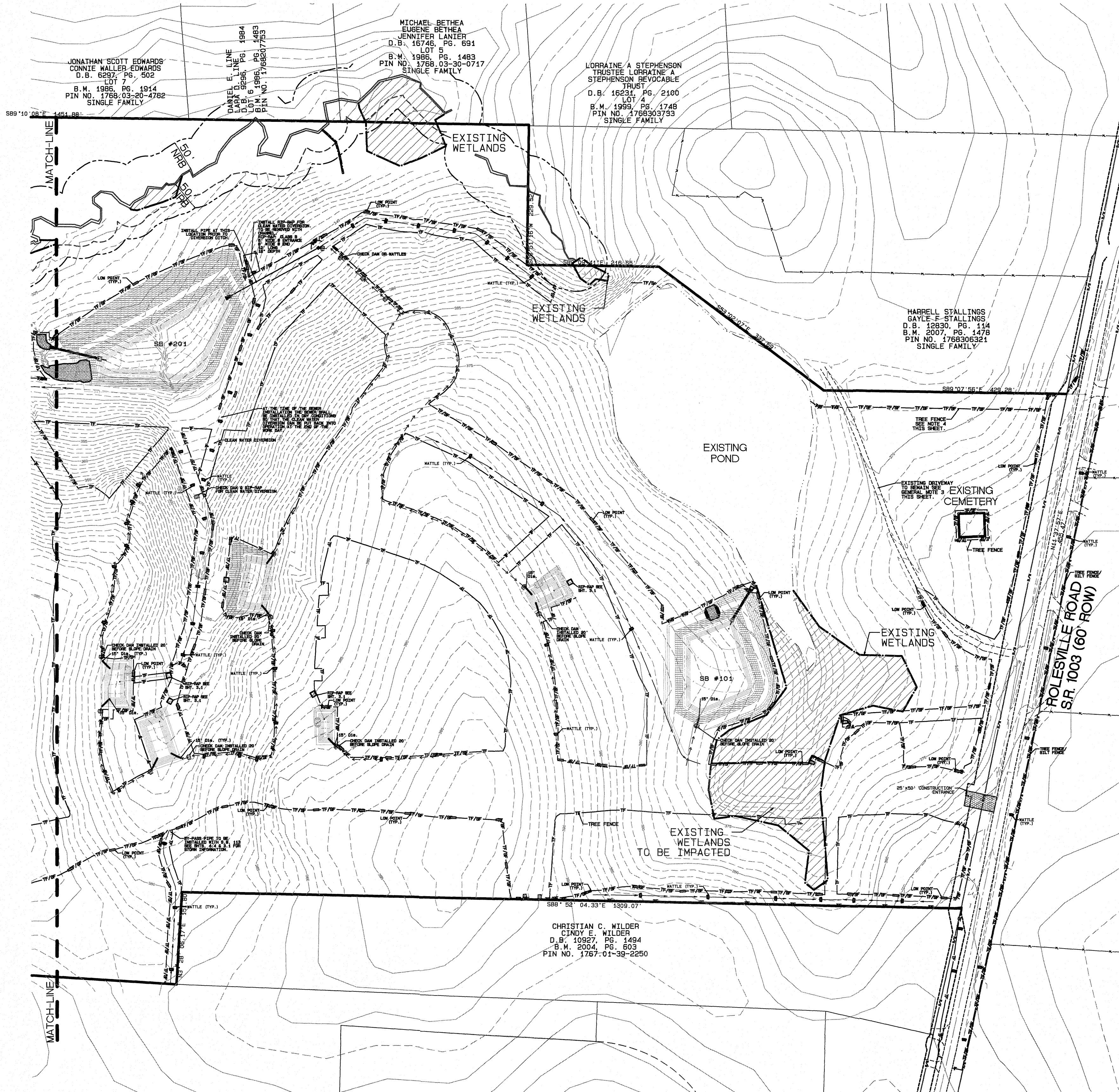
SCALE: 1"=2000'

LEGEND

- ▨ PROPOSED CHECK DAMS
- ▨ PROPOSED WATTLE
- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- ▨ PROPOSED FLARED END SECTION
- INLET PROTECTION
- ▨ PROPOSED SF LOW POINT
- ▨ PROPOSED AREAS FOR 7 DAY STABILIZATION
- ▨ PROPOSED EROSION CONTROL BLANKET
- ▨ BASIN MAINTENANCE PAD

GENERAL NOTE:

1. ALL SEDIMENT TRAP/PONDS SHALL BE STABILIZED WITHIN 7 DAYS OF INSTALLATION.
2. DIVERSION SWALE DESIGN, SEE SHEET 3.1 FOR DETAIL AND REFERENCE TABLE.
3. THE SITE CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE STALLING AND WOODLIEF TRACTS PRIOR TO STARTING WORK AT OR AROUND THE EXISTING DRIVEWAY. AT NO TIME SHALL ACCESS TO THOSE PROPERTIES BE BLOCKED WITHOUT PROVIDING FOR ANOTHER MEANS OF INGRESS/EGRESS.
4. CONTRACTOR TO COORDINATE WITH THE SITE INSPECTOR TO RELOCATE TREE FENCE AT THE TIME OF FENCE AND VEGETATION INSTALLATION IN THIS AREA.

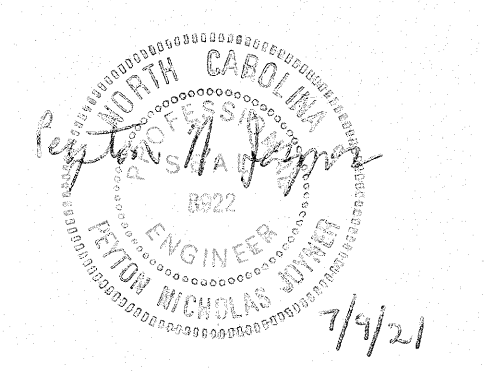


EROSION CONTROL STAGE 1 FOR KALAS FALLS

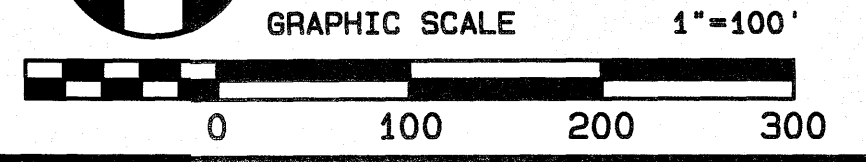
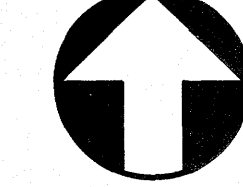
SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER:	9900
CHECKED BY:	JRH
DRAWN BY:	BAH
DATE:	9/19/2019

**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd. Ste. 450  
 Raleigh, NC 27607 919-469-1101



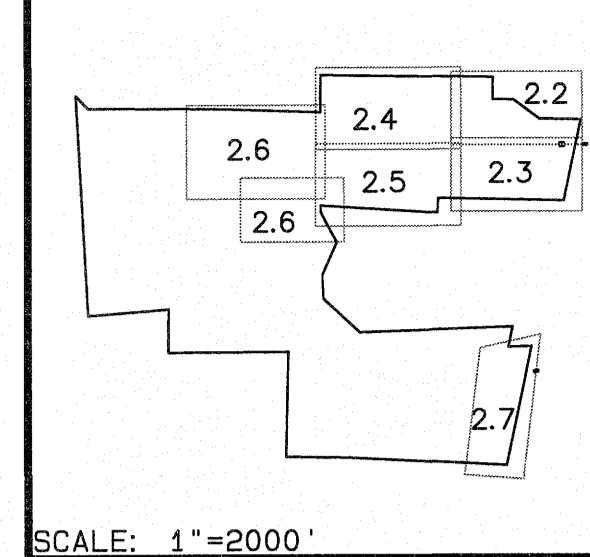
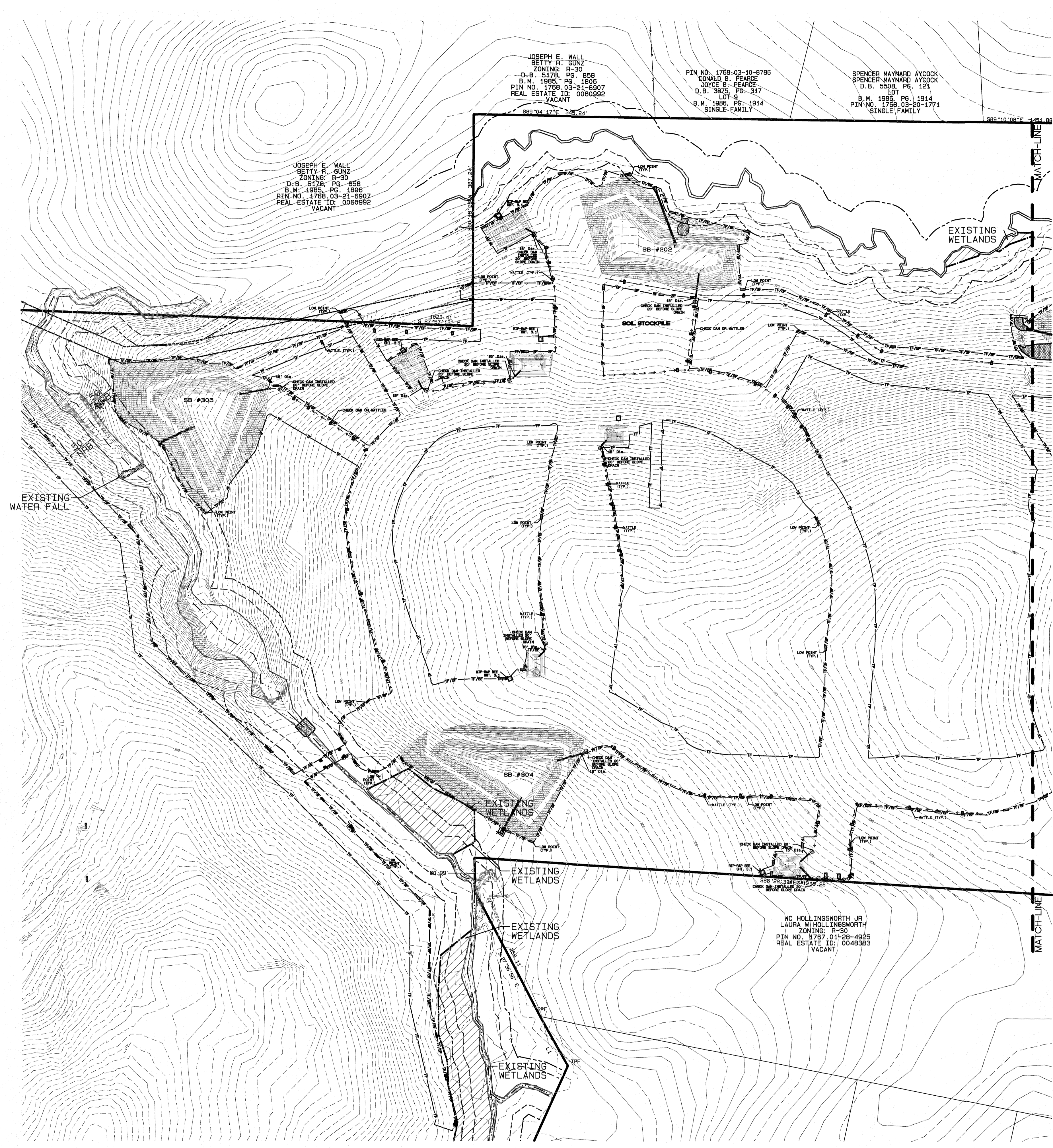
GENERAL NOTES:  
 1. TOPO SHOWN ON THIS SHEET IS 1' CONTOURS AND IS FIELD TOPOGRAPHY.



SHEET NO.  
**2.0**

Plot Date: 7/7/2021 Time: 3:13PM FILE: Z:\Jobs\9900\Wackins\_Property\Ang\Bases Map\Kalas Falls Base Phase 1.dwg





- LEGEND**
- PROPOSED CHECK DAMS
  - PROPOSED WATTLE
  - PROPOSED MANHOLE OR JUNCTION BOX
  - PROPOSED CATCH BASIN
  - PROPOSED YARD INLET
  - PROPOSED FLARED END SECTION
  - INLET PROTECTION
  - PROPOSED SF LOW POINT
  - PROPOSED AREAS FOR 7 DAY STABILIZATION
  - PROPOSED EROSION CONTROL BLANKET
  - BASIN MAINTENANCE PAD

**GENERAL NOTE:**  
 1. ALL SEDIMENT TRAP/PONDS SHALL BE STABILIZED WITHIN 7 DAYS OF INSTALLATION.  
 2. DIVERSION SWALE DESIGN, SEE SHEET 3.1 FOR DETAIL AND REFERENCE TABLE.

- EXISTING LINETYPE LEGEND**
- PROPERTY BOUNDARY
  - EXISTING TREE LINE
  - EXISTING WETLAND
  - EXISTING 50' NRB
  - CENTERLINE OF STREAM
  - EXISTING WATER ELEVATION
  - EXISTING RIGHT OF WAY

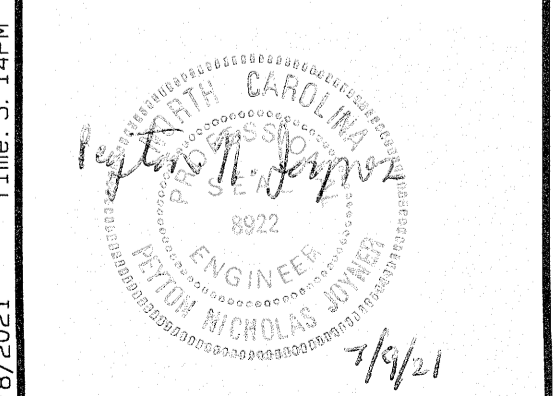
- PROPOSED LINETYPE LEGEND**
- PROPOSED RIGHT OF WAY
  - PROPOSED ROAD CL
  - PROPOSED 30" CURB AND GUTTER
  - PROPOSED EASEMENT
  - PROPOSED SILT FENCE
  - PROPOSED SILT FENCE/TREE FENCE
  - PROPOSED SILT DITCH
  - PROPOSED BAFFLES
  - PROPOSED CLEARING LIMITS
  - PROPOSED TREE FENCE

NO.	DATE	REVISION
1	11-20-20	MINOR REVISIONS PER ITR COMMENTS
2	05-10-21	PLAN REVISIONS PER ITR CONSULTANT REVIEW
3	07-08-21	FINAL SET

**EROSION CONTROL STAGE 1**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

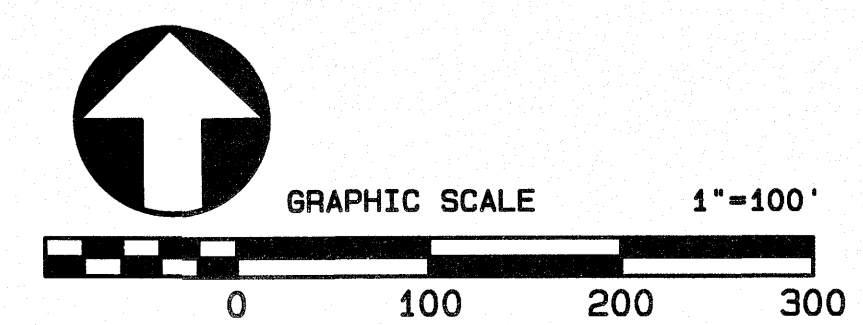
JOB NUMBER: 9900  
 CHECKED BY: PNJ  
 DRAWN BY: BAH  
 DATE: 9/19/2019

**AMERICAN Engineering**  
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 4020 Westchase Blvd. Ste. 450  
 Raleigh, NC 27607 919-469-1101



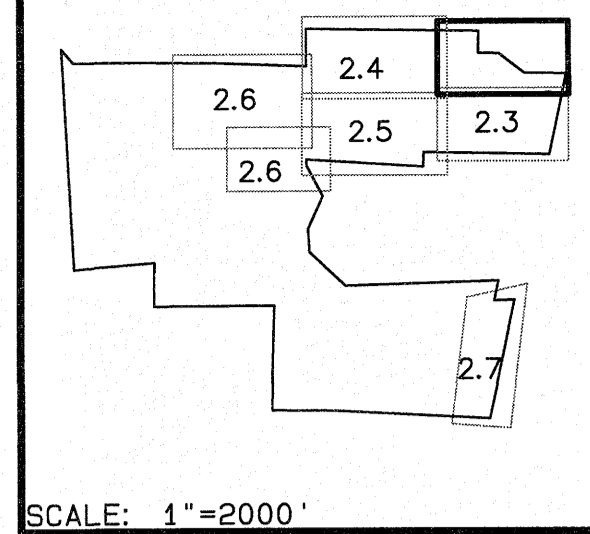
SHEET NO.  
**2.1**

**GENERAL NOTES:**  
 1. TOPO SHOWN ON THIS SHEET IS 1' CONTOURS AND IS FIELD TOPOGRAPHY.

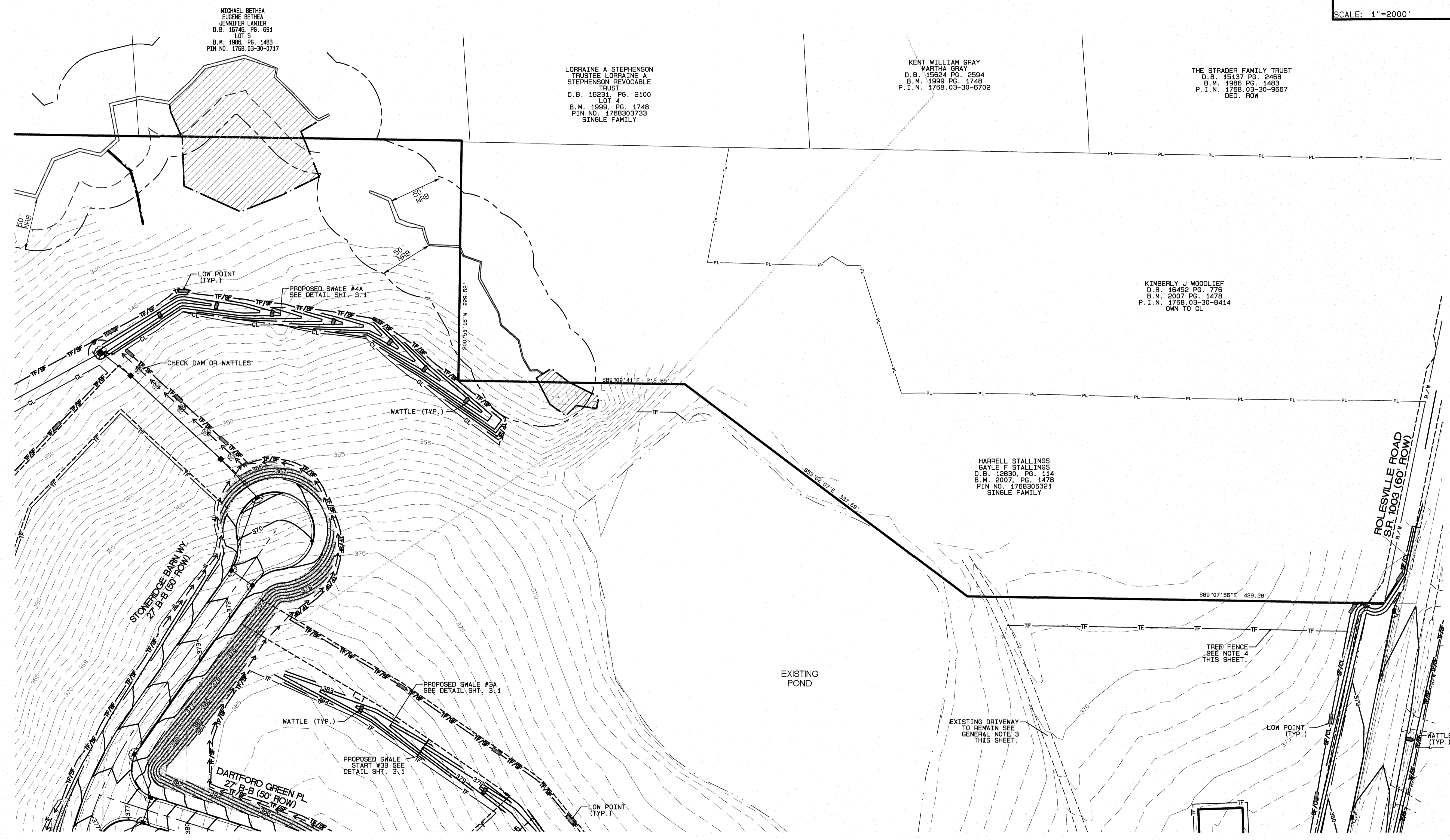


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 Time: 3:14PM  
 Plot Date: 7/8/2021





SCALE: 1"=2000'



MICHAEL BETHA  
EUGENE BETHA  
JENNIFER LANIER  
D.B. 16746 PG. 691  
LOT 5  
B.M. 1986 PG. 1483  
P.I.N. 1768.03-30-0717

LORRAINE A STEPHENSON  
TRUSTEE LORRAINE A  
STEPHENSON REVOCABLE  
TRUST  
D.B. 16231 PG. 2100  
LOT 4  
B.M. 1999 PG. 1748  
P.I.N. 17680303733  
SINGLE FAMILY

KENT WILLIAM GRAY  
MARTHA GRAY  
D.B. 15624 PG. 2594  
B.M. 1999 PG. 1748  
P.I.N. 1768.03-30-6702

THE STRADER FAMILY TRUST  
D.B. 15137 PG. 2468  
B.M. 1996 PG. 1483  
P.I.N. 1768.03-30-9667  
DED. ROW

KIMBERLY J WOODLIEF  
D.B. 16482 PG. 776  
B.M. 2007 PG. 1478  
P.I.N. 1768.03-30-8414  
OWN TO CL

HARRELL STALLINGS  
GAYLE F STALLINGS  
D.B. 12830 PG. 114  
B.M. 2007 PG. 1478  
P.I.N. 17680305321  
SINGLE FAMILY

NO.	DATE	REVISION
1	11-20-20	MINOR REVISIONS PER TOR COMMENTS
2	05-10-21	PLAN REVISIONS PER TOR CONSULTANT REVIEW
3	07-09-21	FINAL SET

**EROSION CONTROL  
PLAN PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

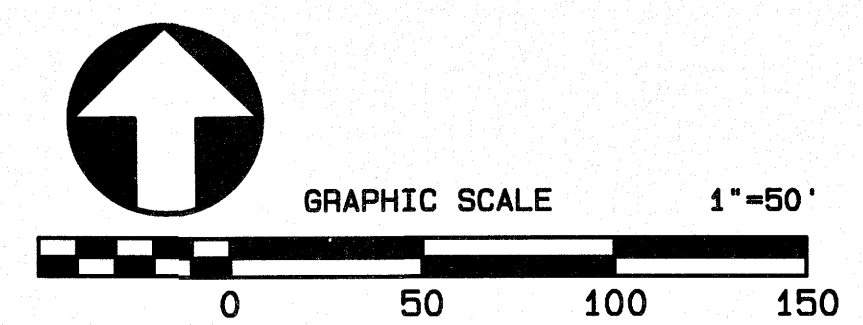
JOB NUMBER: 9900  
CHECKED BY: PNJ  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN**  
Engineering  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd. Ste. 450  
Raleigh, NC 27607 919-469-1101

**GENERAL NOTE:**  
1. ALL SEDIMENT TRAP/PONDS SHALL BE STABILIZED WITHIN 7 DAYS OF INSTALLATION.  
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4. CONTRACTOR TO COORDINATE WITH THE SITE INSPECTOR TO RELOCATE TREE FENCE AT THE TIME OF FENCE AND VEGETATION INSTALLATION IN THIS AREA.

LEGEND		PROPOSED LINETYPE LEGEND	
	PROPOSED CHECK DAMS		PROPOSED RIGHT OF WAY
	PROPOSED WATTLE		PROPOSED ROAD CL
	PROPOSED MANHOLE OR JUNCTION BOX		PROPOSED 30" CURB AND GUTTER
	PROPOSED CATCH BASIN		PROPOSED EASEMENT
	PROPOSED YARD INLET		PROPOSED SILT FENCE
	PROPOSED FLARED END SECTION		PROPOSED SILT FENCE/TREE FENCE
	INLET PROTECTION		PROPOSED SILT DITCH
	PROPOSED SF LOW POINT		PROPOSED BAFFLES
	PROPOSED AREAS FOR 7 DAY STABILIZATION		PROPOSED TREE FENCE
	PROPOSED EROSION CONTROL BLANKET		
	BASIN MAINTENANCE PAD		

EXISTING LINETYPE LEGEND	
	PROPERTY BOUNDARY
	EXISTING TREE LINE
	EXISTING WETLAND
	EXISTING 50" NRB
	CENTERLINE OF STREAM
	EXISTING WATER ELEVATION
	EXISTING RIGHT OF WAY

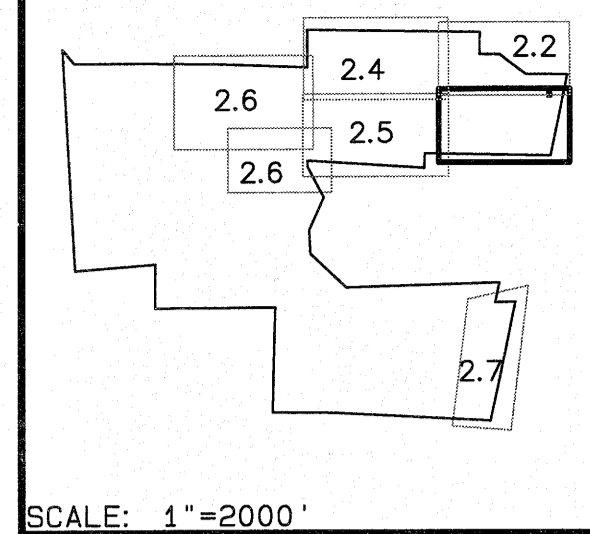


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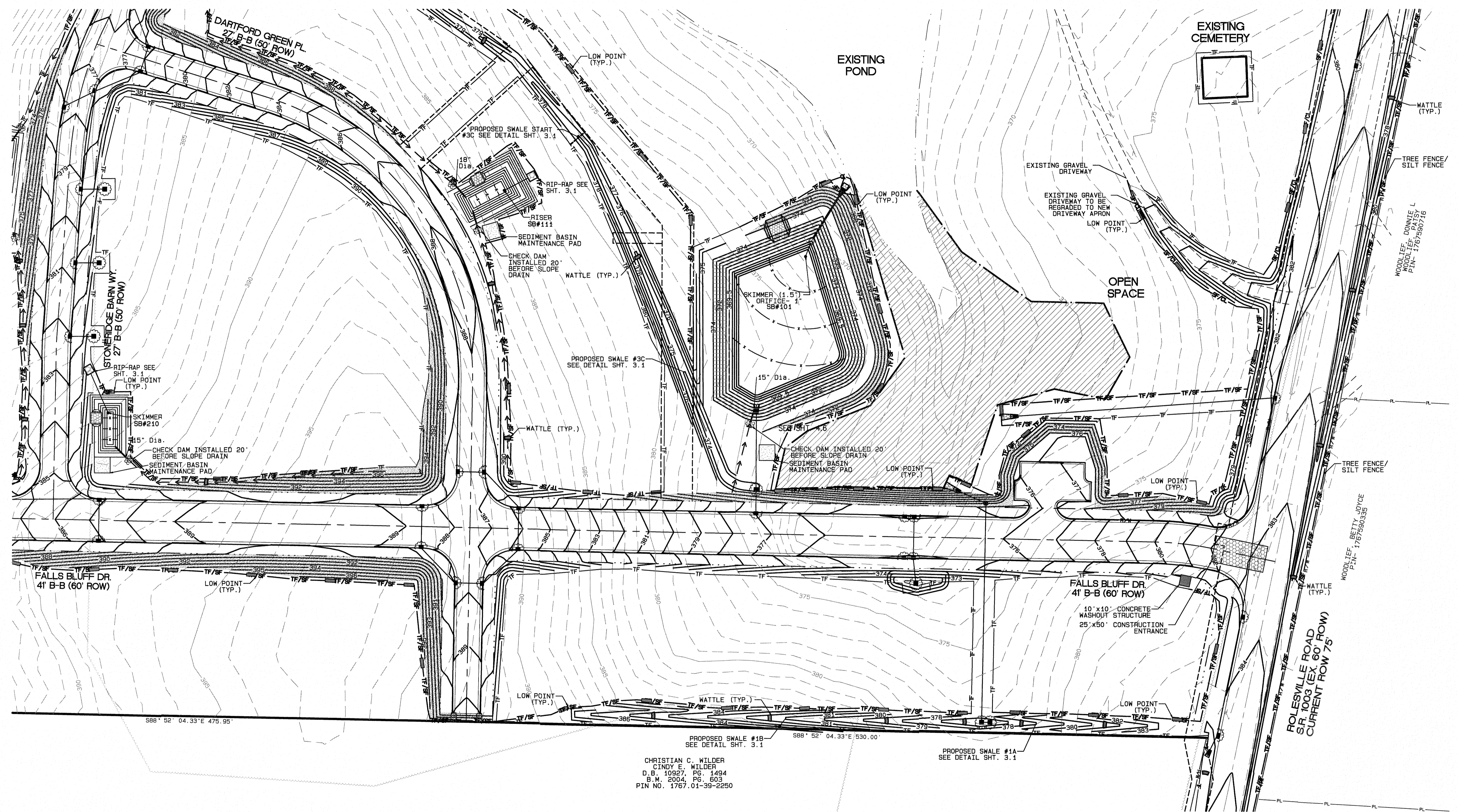
**AMERICAN ENGINEERING ASSOCIATES-SOUTHEAST, P.A.**  
Professional Engineer Seal  
7/9/21

SHEET NO.  
**2.2**





SCALE: 1"=2000'



CHRISTIAN C. WILDER  
CINDY E. WILDER  
D.B. 10927, PG. 1494  
B.M. 2004, PG. 603  
PIN NO. 1767.01-39-2250

NO.	DATE	REVISION
1	11-20-20	MINOR REVISIONS PER TOR COMMENTS
2	05-10-21	PLAN REVISIONS PER TOR CONSULTANT REVIEW
3	07-08-21	FINAL SET

**EROSION CONTROL PLAN PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: PNJ  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
4020 Westchase Blvd., Ste. 450  
Raleigh, NC 27607 919-469-1101

**GENERAL NOTE:**  
1. ALL SEDIMENT TRAP/PONDS SHALL BE STABILIZED WITHIN 7 DAYS OF INSTALLATION.  
2. DIVERSION SWALE DESIGN, SEE SHEET 3.1 FOR DETAIL AND REFERENCE TABLE.  
3. THE SITE CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE STALLING AND WOODLIEF TRACTS PRIOR TO STARTING WORK AT OR AROUND THE EXISTING DRIVEWAY. AT NO TIME SHALL ACCESS TO THOSE PROPERTIES BE BLOCKED WITHOUT PROVIDING FOR ANOTHER MEANS OF INGRESS/EGRESS.

**LEGEND**

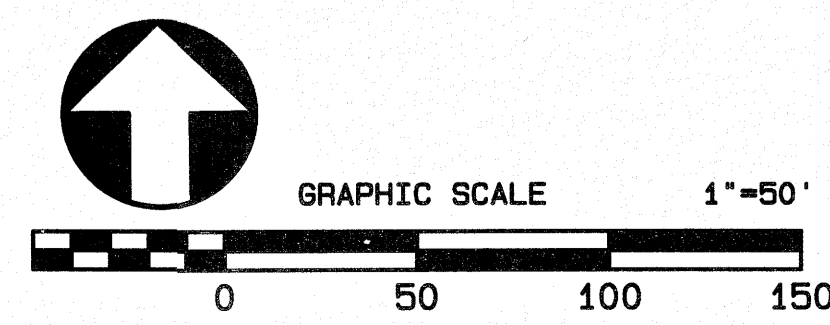
	PROPOSED CHECK DAMS
	PROPOSED WATTLE
	PROPOSED MANHOLE OR JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED FLARED END SECTION
	INLET PROTECTION
	PROPOSED SF LOW POINT
	PROPOSED AREAS FOR 7 DAY STABILIZATION
	PROPOSED EROSION CONTROL BLANKET
	BASIN MAINTENANCE PAD

**PROPOSED LINETYPE LEGEND**

	PROPOSED RIGHT OF WAY
	PROPOSED ROAD CL
	PROPOSED 30" CURB AND GUTTER
	PROPOSED EASEMENT
	PROPOSED SILT FENCE
	PROPOSED SILT FENCE/TREE FENCE
	PROPOSED SILT DITCH
	PROPOSED BAFFLES
	PROPOSED TREE FENCE

**EXISTING LINETYPE LEGEND**

	PROPERTY BOUNDARY
	EXISTING TREE LINE
	EXISTING WETLAND
	EXISTING 50' NRB
	CENTERLINE OF STREAM
	EXISTING WATER ELEVATION
	EXISTING RIGHT OF WAY



Time: 2:43PM  
Plot Date: 7/8/2021  
SHEET NO. **2.3**



**LEGEND**

- PROPOSED CHECK DAMS
- PROPOSED WATTLE
- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- PROPOSED FLARED END SECTION
- INLET PROTECTION
- PROPOSED SF LOW POINT
- PROPOSED AREAS FOR 7 DAY STABILIZATION
- PROPOSED EROSION CONTROL BLANKET
- BASIN MAINTENANCE PAD

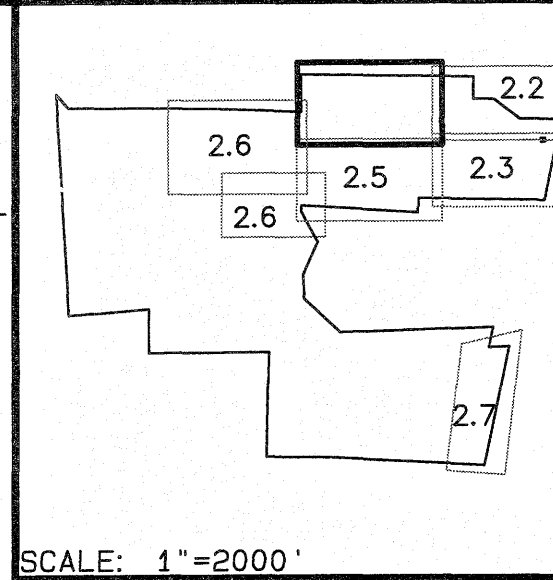
**PROPOSED LINETYPE LEGEND**

- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED EASEMENT
- PROPOSED SILT FENCE
- PROPOSED SILT FENCE/TREE FENCE
- PROPOSED SILT DITCH
- PROPOSED BAFFLES
- PROPOSED TREE FENCE

**EXISTING LINETYPE LEGEND**

- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**GENERAL NOTE:**  
 1. ALL SEDIMENT TRAP/PONDS SHALL BE STABILIZED WITHIN 7 DAYS OF INSTALLATION.  
 2. DIVERSION SWALE DESIGN, SEE SHEET 3.1 FOR DETAIL AND REFERENCE TABLE.



SCALE: 1"=2000'

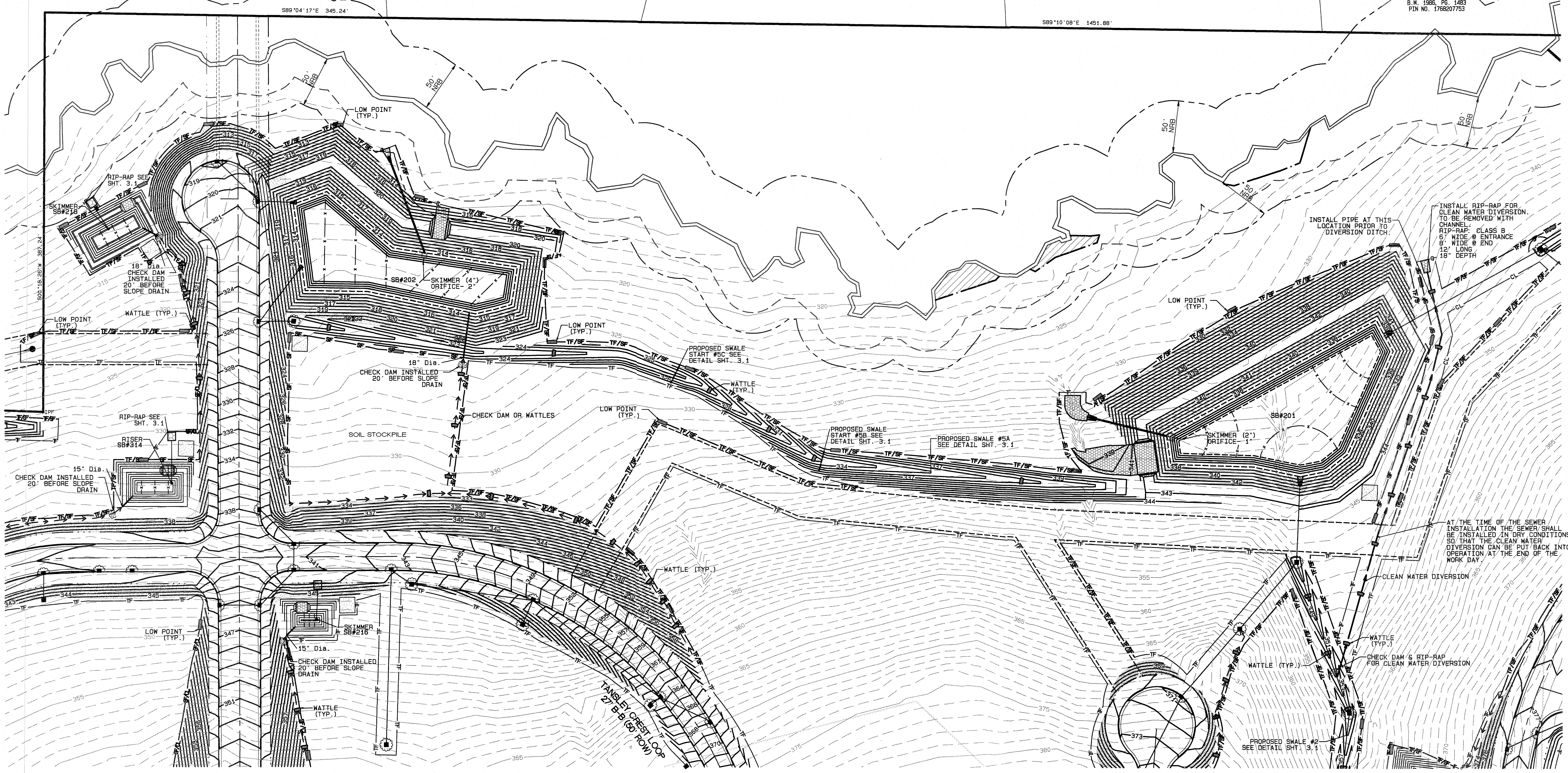
JOSEPH E. WALL  
 BETTY R. GUNZ  
 ZONING: R-30  
 D.B. 5178, PG. 858  
 B.M. 1985, PG. 1806  
 PIN NO. 1768-03-21-6997  
 REAL ESTATE ID: 0069992

DONALD B. PEARCE  
 JOYCE B. PEARCE  
 D.B. 3875, PG. 317  
 LOT 9  
 B.M. 1986, PG. 1914  
 PIN NO. 1768-03-10-8786

SPENCER MAYNARD AYCOCK  
 CAROLYN P. AYCOCK  
 D.B. 5506, PG. 121  
 LOT 7  
 B.M. 1986, PG. 1914  
 PIN NO. 1768-03-20-1771  
 SINGLE FAMILY

JONATHAN SCOTT EDWARDS  
 CONNIE MALLER EDWARDS  
 D.B. 6297, PG. 502  
 LOT 7  
 B.M. 1986, PG. 1914  
 PIN NO. 1768-03-20-4762

DANTE E. LINE  
 LARA D. LINE  
 D.B. 9296, PG. 1984  
 LOT 5  
 B.M. 1986, PG. 1483  
 PIN NO. 1768207753

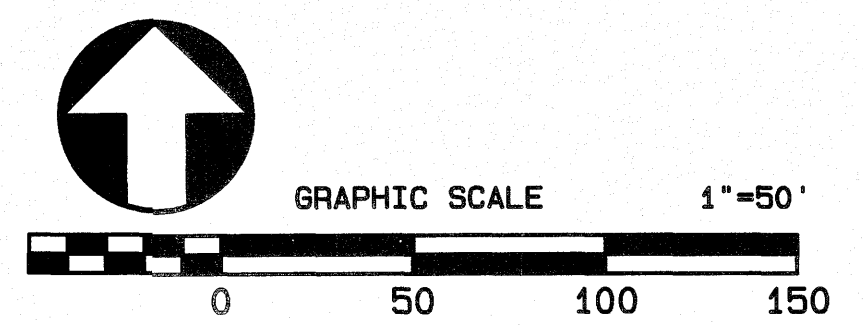
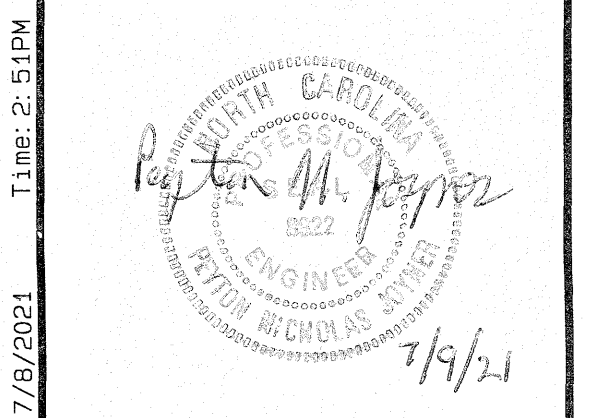


No.	DATE	REVISION
1	11-20-20	MINOR REVISIONS PER FOR COMMENTS
2	07-28-21	PLAN REVISIONS PER FOR CONSULTANT REVIEW
3	07-28-21	FINAL REVISIONS PER FOR CONSULTANT REVIEW

**EROSION CONTROL PLAN PHASE 1**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: PNJ  
 DRAWN BY: BAH  
 DATE: 4/24/2020

**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd. Ste. 450  
 Raleigh, NC 27607 919-469-1101



SHEET NO.  
**2.4**

FILE: Z:\Jobs\9900\WetKIns\Propert\Map\Kalas Falls Base Phase 1.dwg Plot Date: 7/8/2021 Time: 2:51PM

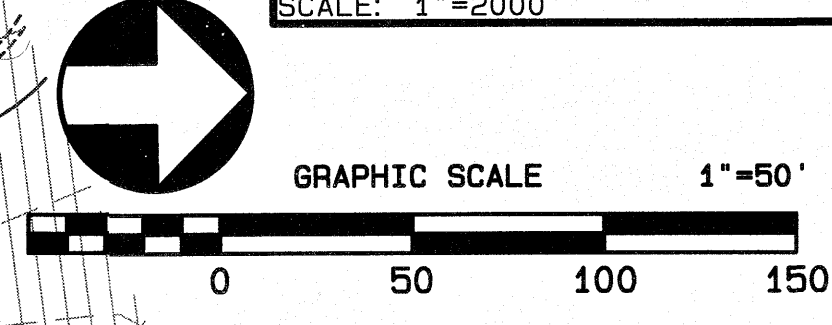
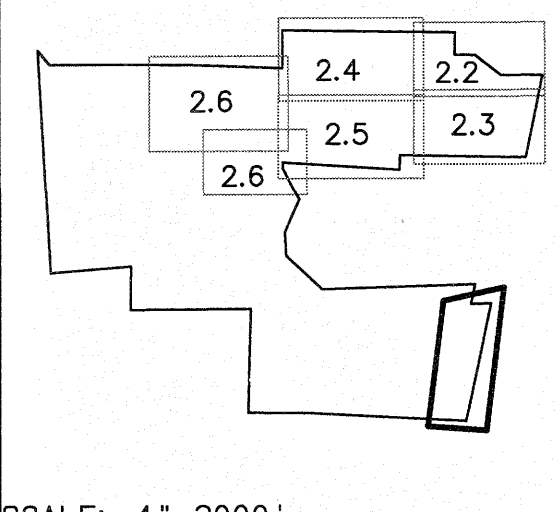
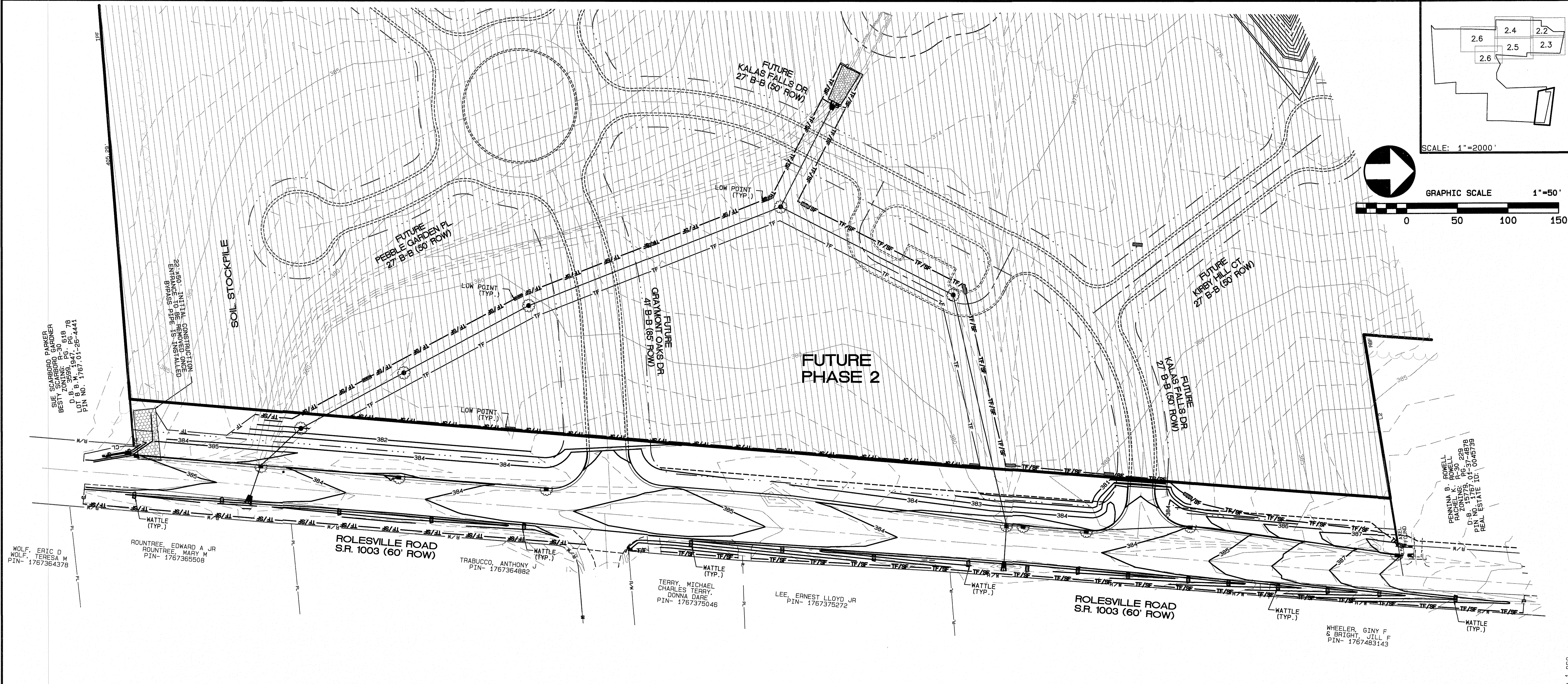












AVE SCARBORO PARKER  
BESTY SCARBORO PL 30  
D.B. 2009B PG. 65 7B  
LOT 8 B.M. 1767701-265-4441  
PIN NO. 1767701-265-4441

CONSTRUCTION  
CANNOT BE IN PROGRESS  
UNTIL THE PERMITS ARE  
OBTAINED FROM THE  
COUNTY ENGINEER

SOIL STOCKPILE

FUTURE  
PEBBLE GARDEN PL  
27' B-B (60' ROW)

FUTURE  
GRANMOUNT OAKS DR  
41' B-B (65' ROW)

FUTURE  
PHASE 2

FUTURE  
KIRBY HILL CT  
27' B-B (60' ROW)

FUTURE  
KALAS FALLS DR  
27' B-B (60' ROW)

ROSELL  
PENNINGTON  
D.B. 15779 PG. 37-4876  
PIN 15779-03-37-4876

WOLF, ERIC D  
WOLF, TERESA M  
PIN- 1767364378

ROUNTREE EDWARD A JR  
ROUNTREE MARY M  
PIN- 1767365508

ROLESVILLE ROAD  
S.R. 1003 (60' ROW)

TRABUCCO, ANTHONY J  
PIN- 1767364882

TERRY, MICHAEL  
CHARLES TERRY,  
DONNA DARE  
PIN- 1767375046

LEE, ERNEST LLOYD JR  
PIN- 1767375272

ROLESVILLE ROAD  
S.R. 1003 (60' ROW)

WHEELER, GINY F  
& BRIGHT, JILL F  
PIN- 1767483143

**LEGEND**

- PROPOSED CHECK DAMS
- PROPOSED WATTLE
- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- PROPOSED FLARED END SECTION
- INLET PROTECTION
- PROPOSED SF LOW POINT
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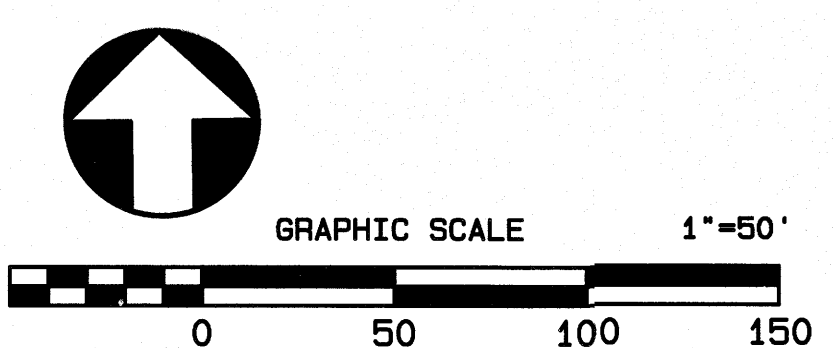
- GENERAL NOTE:**
1. ALL SEDIMENT TRAP/PONDS SHALL BE STABILIZED WITHIN 7 DAYS OF INSTALLATION.
  2. A SEWER OUTFALL IS TO BE CONSTRUCTED IN THE FUTURE PHASE 3 AREA TO SERVICE ANOTHER PROJECT OR FUTURE PHASE 2 OF THIS DEVELOPMENT. NO OTHER IMPROVEMENTS IN THE FUTURE PHASE 3 IS BEING PROPOSED.
  3. THE STORM OUTFALL IS TO BE CONSTRUCTED IN THE FUTURE PHASE 2 AREA TO BY-PASS THE OFF-SITE DRAINAGE.
  4. DIVERSION SWALE DESIGN, SEE SHEET 3.1 FOR DETAIL AND REFERENCE TABLE.

**PROPOSED LINETYPE LEGEND**

- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED EASEMENT
- PROPOSED SILT FENCE
- PROPOSED SILT FENCE/TREE FENCE
- PROPOSED SILT DITCH
- PROPOSED BAFFLES
- PROPOSED TREE FENCE

**EXISTING LINETYPE LEGEND**

- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY



NO.	DATE	REVISION
1	11-20-20	MINOR REVISIONS PER TOR COMMENTS
2	05-10-21	PLAN REVISIONS PER TOR CONSULTANT REVIEW
3	07-08-21	FINAL SET

**EROSION CONTROL  
PLAN PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: PNJ  
DRAWN BY: BAH  
DATE: 9/19/2019

**AMERICAN**  
Engineering  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd. Ste. 450  
Raleigh, NC 27607 919-469-1101



SHEET NO.  
**2.7**

FILE: Z:\Jobs\9900\Wak\Ins Property\dwg\Bases Map\Kalas Falls Base Phase 1.dwg  
 I:\ms-3.dwg  
 Plot Date: 7/9/2021



CONSTRUCTION SEQUENCE FOR PHASE 1 SHALL BE AS FOLLOWS:

- OWNER SHALL OBTAIN NCG01 PERMIT. THERE MAY BE A FEE FOR THIS.
- SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE WATERSHED MANAGER, OBTAIN LAND DISTURBING PERMIT. CONTACT JEEVAN NEUPANE, P. E. (919-819-8907).
- TREE PROTECTION FENCES, SILT FENCES AND CONSTRUCTION ENTRANCE SHALL BE INSTALLED AS SHOWN ON THE EROSION CONTROL SHEETS. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED ALL RESULTING BARE AREAS IMMEDIATELY AFTER CONSTRUCTION. ALL MAINTENANCE PADS SHALL BE CLEARED BUT THE STONE REQUIRED SHOULD NOT BE INSTALLED UNTIL JUST BEFORE THE PAD IS NEEDED.
- CONSTRUCT EROSION CONTROL MEASURES INCLUDING SILT DITCHES LEADING TO THEM AS SHOWN ON THE EROSION CONTROL SHEETS. CONSTRUCT DIVERSION DITCHES AS SHOWN. EACH DIVERSION DITCH SHALL HAVE THE LINING INSTALLED THE SAME DAY AS THE SECTION IS CONSTRUCTED. THE PIPE FROM 200A TO 200 SHALL BE INSTALLED AT THE SAME TIME AS SB#201 TO CARRY SEDIMENT WATER UNDER FUTURE DITCH CARRYING CLEAN DIVERTED WATER.
- OBTAIN CERTIFICATE OF COMPLIANCE THROUGH INSPECTION BY WATERSHED MANAGER.
- GENERAL GRADING MAY BEGIN.
- THE GRADING OF FALLS BLUFF DR. BEYOND TANSLEY CREST LOOP (WEST INTERSECTION) SHALL BE DELAYED TO PROVIDE AN USABLE SLOPE FOR MATERIALS AND EQUIPMENT TO ACCESS THE CONSTRUCTION OF THE SEWER LINE JUST BEYOND THE CREEK. WHEN THE SEWER LINE IS FINISHED THE GRADING MAY BE DONE AS SHOWN ON THE PLANS.
- CLEAN SEDIMENT BASINS WHEN ONE-HALF FULL.
- SEED AND MULCH DENUDED AREA INCLUDING ANY CUT/FILL SLOPES WITHIN FOURTEEN (14) DAYS AFTER FINISHED GRADES ARE ESTABLISHED.
- MAINTAIN SOIL EROSION CONTROL MEASURES UNTIL PERMANENT GROUND IS ESTABLISHED.
- AS EACH CATCH BASIN OR YARD INLET IS INSTALLED, IT SHALL HAVE INLET PROTECTION INSTALLED. THIS IS TO REMAIN IN PLACE UNTIL ALL AREAS WHICH DRAIN TO IT ARE STABILIZED OR PAVED.
- WHEN ALL CONTRIBUTARY AREAS ARE STABILIZED, OBTAIN APPROVAL FROM THE WATERSHED MANAGER TO CLOSE EACH SEDIMENT BASIN.
- CLEAN SEDIMENT FROM SEDIMENT BASIN WHICH IS TO BE CONVERTED TO A WET POND AND REMOVE THE SKIMMER. INSTALL PLANTINGS AS REQUIRED. CLOSE THE DRAIN VALVE.
- REQUEST FINAL APPROVAL BY WATERSHED MANAGER AFTER VEGETATION IS ESTABLISHED.
- REMOVE SOIL EROSION CONTROL MEASURES AND STABILIZE THESE AREAS.
- THE OWNER IS TO FINALIZE THE NCG01 PERMIT.

NOTES FOR CONSTRUCTION:

- PLANS FOR INFRASTRUCTURE ONLY.
- ALL CONSTRUCTION MUST BE PERFORMED IN ACCORDANCE WITH CURRENT CITY OF RALEIGH STANDARD SPECS AND DETAILS, WAKE COUNTY SPECIFICATIONS, NCDOT SPECIFICATIONS AND TOWN OF ROLESVILLE SPECIFICATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF EXISTING CONDITIONS. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES BETWEEN FIELD CONDITIONS AND THESE DRAWINGS.
- THERE ARE NO 100 YEAR FLOOD PLAINS PER FEMA MAP WITHIN PROPERTY.
- CONTRACTOR WILL KEEP STREETS CLEAN AT ALL TIMES, OR A WASH STATION WILL BE REQUIRED.
- ALL CATCH BASINS SHALL HAVE INLET PROTECTION.
- ALL CUT AND FILL SLOPES MUST BE STABILIZED WITHIN 14 DAYS OF ANY PHASE OF GRADING, WITH SOME SLOPES TO BE STABILIZED WITHIN 7 DAYS AS SHOWN ON CHART TO THE LEFT AND ON THE EC SHEETS.
- TREE PROTECTION FENCING ON THIS PROJECT WILL BE INSTALLED AND INSPECTED BEFORE THE GRADING PERMIT IS ISSUED.
- A PRE-CONSTRUCTION CONFERENCE MAY BE REQUIRED BEFORE GRADING PERMIT IS ISSUED.
- PERMANENT GROUND COVER WILL BE ESTABLISHED IN 15 WORKING DAYS OR 90 CALENDAR DAYS WHICHEVER IS SHORTER.
- THE AREA DESIGNATED SHALL BE USED FOR TOPSOIL STOCKPILE.
- THIS PROJECT IS IN THE NEUSE RIVER WATERSHED. PHASE 1 AREA = 83.66 ACRES
- WETLANDS ON THIS PROJECT ARE AS SHOWN.
- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CITY OF RALEIGH STANDARDS AND SPECIFICATIONS, WAKE COUNTY STANDARDS AND WITH N.C.D.O.T., WHERE APPLICABLE.
- MINIMUM CORNER CLEARANCE FROM THE CURB LINE OF INTERSECTING STREETS SHALL BE AT LEAST TWENTY (20) FEET FROM THE POINT OF TANGENCY.

Y:\Jobs\9900\Watkins Property\Documents\Schedules\ConSeq\_Ph1.docx 11/19/20, Rev. 12/7/20

Required Wake County Basin Removal Sequence

- Schedule a site meeting with the Environmental Consultant to determine if a basin can be removed. Install silt fencing or other temporary erosion control measures as needed prior to removal of the basin.
- Remove Basin(s) and associated temporary diversion ditches. If culvert pipes need to be extended, perform this operation at this time. Fine grade area in preparation for seeding.
- Perform seedbed preparation, seed, mulch and asphalt tack any resulting bare areas immediately.
- Install velocity dissipators and/or level spreaders as required on the Erosion Control Plan.
- When site is fully stabilized, call Environmental Consultant for approval of removing remaining temporary erosion control measures and advice on when site can be issued a Certificate of Completion.

Note: A meeting should also be scheduled with the Environmental Consultant to determine when a basin may be converted for stormwater use. Some municipalities may also require this.

REQUIRED WAKE COUNTY CONSTRUCTION SEQUENCE\*

- SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE WATERSHED MANGER, JEEVAN NEUPANE, PE (919)819-8907. OBTAIN A LAND-DISTURBING PERMIT.
- INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS OR OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
- CALL JEEVAN NEUPANE, PE (919)819-8907 FOR AN ONSITE INSPECTION BY THE WATERSHED MANAGER TO OBTAIN A CERTIFICATE OF COMPLIANCE.
- BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
- INSTALL STORM SEWER, IF SHOWN, AND PROTECT INLETS WITH BLOCK AND GRAVEL INLET CONTROLS, SEDIMENT TRAPS OR OTHER APPROVED MEASURES AS SHOWN ON THE PLAN. BEGIN CONSTRUCTION, BUILDING, ETC.
- STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
- WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL JEEVAN NEUPANE, PE (919)819-8907 FOR AN INSPECTION BY THE WATERSHED MANAGER.
- IF SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC., AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS, SHOULD NOW BE INSTALLED.
- WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE WATERSHED MANAGER, JEEVAN NEUPANE, PE (919)819-8907. OBTAIN A CERTIFICATE OF COMPLETION.

SEEDBED PREPARATION

- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
- RIP THE ENTIRE AREA TO 6-INCH DEPTH.
- REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
- APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW \*).
- CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
- SEED ON FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
- MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
- INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 80% DAMAGED, RE-ESTABLISHED FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
- CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

\*APPLY: AGRICULTURAL LIMESTONE - 2 TONS/ACRE (3 TONS/ACRE IN CLAY SOILS)  
 FERTILIZER - 1,000 LB/ACRE - 10-10-10  
 SUPERPHOSPHATE - 500 LB/ACRE - 20% ANALYSIS  
 MULCH - 2 TONS/ACRE - SMALL GRAIN STRAW  
 ANCHOR - ASPHALT EMULSION @ 300 GALS/ACRE

Maintenance Requirements For Stockpile Areas

- Seeding or covering stockpiles with tarps or mulch is required and will reduce erosion problems. Tarps should be keyed in at the top of the slope to keep water from running underneath the plastic.
- If a stockpile is to remain for future use after the project is complete (builders, etc.), the financial responsible party must notify Wake County of a new responsible party for that stockpile.
- The approved plan shall provide for the use of staged seeding and mulching on a continual basis while the stockpile is in use.
- Establish and maintain a vegetative buffer at the toe of the slope (where practical).

STOCKPILE DESIGN CRITERIA  
 A. A 25-FOOT TEMPORARY MAINTENANCE AND ACCESS EASEMENT SHALL BE SHOWN AROUND ALL PROPOSED STOCKPILES (EROSION CONTROL MEASURES SURROUNDING THE STOCKPILE SHALL BE SHOWN AT THE OUTER LIMIT OF THIS EASEMENT).  
 B. STOCKPILE FOOTPRINTS SHALL BE SETBACK A MINIMUM OF 25' FROM ADJACENT PROPERTY LINES.  
 C. A NOTE SHALL BE PROVIDED ON THE APPROVED PLAN THAT STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET.  
 D. STOCKPILE SLOPES SHALL BE 2:1 OR FLATTER.  
 E. APPROVED BMPs SHALL BE SHOWN ON A PLAN TO CONTROL ANY POTENTIAL SEDIMENT LOSS FROM A STOCKPILE.  
 F. STOCKPILING MATERIALS ADJACENT TO A DITCH, DRAINAGEWAY, WATERCOURSE, WETLAND, STREAM BUFFER, OR OTHER BODY OF WATER SHALL BE AVOIDED UNLESS AN ALTERNATIVE LOCATION IS DEMONSTRATED TO BE UNAVAILABLE.  
 G. ANY CONCENTRATED FLOW LIKELY TO AFFECT THE STOCKPILE SHALL BE DIVERTED TO AN APPROVED BMP.  
 H. OFF-SITE SPOIL OR BORROW AREAS MUST BE IN COMPLIANCE WITH WAKE COUNTY UDO AND STATE REGULATIONS. ALL SPOIL AREAS OVER AN ACRE ARE REQUIRED TO HAVE AN APPROVED SEDIMENT CONTROL PLAN. DEVELOPER/CONTRACTOR SHALL NOTIFY WAKE COUNTY OF ANY OFFSITE DISPOSAL OF SOIL, PRIOR TO DISPOSAL. FILL OF FEMA FLOODWAYS AND NON-ENCROACHMENT AREAS ARE PROHIBITED EXCEPT OTHERWISE PROVIDED BY SUBSECTION 14-19-2 OF THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE (CERTIFICATIONS AND PERMITS REQUIRED).  
 MAINTENANCE REQUIREMENTS TO BE NOTED ON THE PLAN  
 I. SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TARPS SHOULD BE KEYS IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.  
 J. IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY OF A NEW RESPONSIBLE PARTY FOR THAT STOCKPILE.  
 K. THE APPROVED PLAN SHALL PROVIDE FOR THE USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE.  
 L. ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).

GENERAL NOTES:

- ALL TREE PROTECTION FENCING SHALL BE MAINTAINED UNTIL ALL SITE WORK IS COMPLETED. THE FENCING SHALL BE REMOVED PRIOR TO THE FINAL SITE INSPECTION FOR THE CERTIFICATE OF OCCUPANCY (CO).
- ALL TREE PROTECTION FENCING SHALL BE MAINTAINED UNTIL ALL SITE WORK IS COMPLETED. THE FENCING SHALL REMAIN UNTIL ISSUANCE OF CERTIFICATE OF OCCUPANCY (CO).
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH STANDARDS AND SPECIFICATIONS.
- WITHIN THE SIGHT TRIANGLES SHOWN ON ALL SITE PLAN AND LANDSCAPE PLAN SHEETS, NO OBSTRUCTION BETWEEN 2 FEET AND 8 FEET IN HEIGHT ABOVE THE CURB LINE ELEVATION SHALL BE LOCATED IN WHOLE OR PART. OBSTRUCTIONS INCLUDE, BUT ARE NOT LIMITED TO, ANY BERM, FOLIAGE, FENCE, WALL SIGN, PARKED CAR, OR OTHER OBJECT. ALL STREET TREES FALLING WITHIN THE SIGHT TRIANGLES SHOWN ON THIS PLAN SHALL BE LIMBED UP BETWEEN 2 FEET AND 8 FEET IN HEIGHT ABOVE THE CURB LINE ELEVATION.
- MINIMUM CORNER CLEARANCE FROM THE CURB LINE OF INTERSECTING STREETS SHALL BE AT LEAST 20 FEET FROM THE POINT OF TANGENCY OF THE CURB. NO DRIVEWAYS SHALL ENCRDACH ON THIS MINIMUM CORNER CLEARANCE.
- ALL STREETS SHOWN ON THESE PLANS HAVE FULL WIDTH OF RIGHT-OF-WAY CLEARED AND GRADED WITHIN 30 FEET OF ALL STREET INTERSECTIONS. THE FULL WIDTH OF RIGHT-OF-WAY SHALL BE CLEARED AND GRADED ALONG ALL MAJOR, MINOR AND SENSITIVE AREA THOROUGHFARES.
- WHEEL CHAIR ACCESS RAMPS WILL BE PROVIDED IN ACCORDANCE WITH RALEIGH STANDARD DRAWING STD. #20.11. WHERE SIDEWALK IS NOT REQUIRED ALONG THE PUBLIC RIGHT-OF-WAY, CURB IS TO BE DEPRESSED AT ALL RAMP LOCATIONS SHOWN ON STD. #20.11.
- ALL INDIVIDUAL LOTS SHALL HAVE AN EROSION CONTROL PLAN SUBMITTED PRIOR TO CONSTRUCTION OF HOUSES THERE UPON. IF MULTIPLE LOTS WITH A TOTAL DISTURBED AREA OF MORE THAN 12,000 SF ARE TO BE BUILT UPON AT ONE TIME, A COORDINATED EROSION CONTROL PLAN SHALL BE SUBMITTED.

Site Area Description	Stabilization	Temporary Exclusions
Perimeter dikes, berms, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not adjacent to HQW zones.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeter and HQW Zones.

SEEDING SCHEDULE

Date	Type*	Planting Rate
Aug 15 - Nov 1	Tall Fescue or Hard Fescue	300 lb./acre
Nov 1 - Mar 1	Tall Fescue and Abruzzi Rye or Annual Rye	300 lb./acre
Mar 1 - Apr 15	Tall Fescue or Hard Fescue	300 lb./acre
Apr 15 - June 30	Hulled common Bermuda grass, Weeping Love Grass	25 lb./acre
July 15 - Aug 15	Tall Fescue and ***Browntop Millet ***at Sorghum-Sudan Hybrids	35 lb./acre

Consult Erosion Control Officer or NRCS for additional alternatives for vegetating denuded areas. The above vegetation rates are those which do well under local conditions; other seeding rate combinations are possible.

\*\*\*Temporary - Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow over 12 inches in height before mowing to keep fescue from being shaded out.

\*Bahia grass shall not be used in City maintained areas.

SHOULDERS, SIDE DITCHES, SLOPES

Date	Type*	Planting Rate
Mar 1 - June 1	Seicea Lespedeza (scarified) and Add Tall Fescue or	50 lb./acre 120 lb./acre
Mar 1 - Apr 15	Add Weeping Love Grass or	10 lb./acre
Mar 1 - June 30	Add Hulled Common Bermuda grass	25 lb./acre
June 1 - Sept 1	***Tall Fescue and ***Browntop Millet ***at Sorghum-Sudan Hybrids	120 lb./acre 35 lb./acre 30 lb./acre
Sept 1 - Mar 1	Seicea Lespedeza (unhulled/unscaified) and Add Abruzzi Rye or Annual Rye	70 lb./acre 120 lb./acre 25 lb./acre

Consult Erosion Control Officer or NRCS for additional alternatives for vegetating denuded areas. The above vegetation rates are those which do well under local conditions; other seeding rate combinations are possible.

\*\*\*Temporary - Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow over 12 inches in height before mowing to keep fescue from being shaded out.

\*Bahia grass shall not be used in City maintained areas.

EXISTING	NAME	PROPOSED
=====	WATER LINE	=====
=====	GAS LINE	=====
=====	OVERHEAD ELECTRIC	=====
=====	UNDERGROUND ELECTRIC	=====
=====	OVERHEAD TELEPHONE	=====
=====	UNDERGROUND TELEPHONE	=====
=====	STORM DRAIN	=====
=====	SANITARY SEWER	=====
=====	FORCE MAIN	=====
=====	CURB & GUTTER LINE	=====
=====	SWALE/DITCH LINE	=====
=====	STREAM LINE	=====
=====	FENCE LINE	=====
=====	TREE LINE	=====
=====	FLOW LINE	=====
=====	TEMP DIVERSION LINE	=====
=====	CLEARING LIMITS	=====
=====	TREE FENCE	=====
=====	SILT FENCE LINE	=====
=====	MINOR CONTOUR LINE	=====
=====	INDEX CONTOUR LINE	=====
=====	CENTERLINE	=====
=====	ADJACENT PROPERTY LINE	=====
=====	PROPERTY LINE	=====
=====	RIGHT-OF-WAY LINE	=====
=====	EASEMENT LINE	=====
=====	BUFFER ZONE LINE	=====
=====	RIPARIAN BUFFER	=====
=====	100 YR. FLOOD ELEV.	=====
=====	BUILDING RESTRICTION FLOOD LINE	=====
=====	MATCH LINE	=====
=====	PHASE LINE	=====
=====	LEVEL SPREADER	=====

UTILITY LEGEND SYMBOL

ABBREV.	SYMBOL	NAME
ARV	⊙	AIR RELEASE VALVE
PP	⊙	UTILITY POLE
WVPR	⊙	PROPOSED WATER VALVE
WVEX	⊙	EXISTING WATER VALVE
BOAPR	⊙	PROPOSED BLOW OFF ASSEMBLY
BOA EX	⊙	EXISTING BLOW OFF ASSEMBLY
WLCROSS	⊙	WATERLINE CROSS
WLTEE	⊙	WATERLINE TEE
FHPR	⊙	PROPOSED FIRE HYDRANT
FHEX	⊙	EXISTING FIRE HYDRANT
MHPR	⊙	PROPOSED MAN HOLE
MHEX	⊙	EXISTING MAN HOLE
FESPR	⊙	PROPOSED FLARED END SECTION
FESEX	⊙	EXISTING FLARED END SECTION
REDPR	⊙	PROPOSED REDUCER
REDEX	⊙	EXISTING REDUCER
SANSERV	⊙	EXIST. SAN SEWER SERV
SANSERV	⊙	PROPOSED SAN SEWER SERV CLEAN OUT
WSPR	⊙	PROPOSED WATER SERVICE
⊙	⊙	PROPOSED POWER POLE
⊙	⊙	PROPOSED LIGHT POLE

LOT SIZE:	LOT IMPERVIOUS AREA:	LOT NUMBERS:
50'-59'	3,650 S.F.	243-261
60'-69'	3,920 S.F.	44-48,236-242,262-269
70'-79'	4,650 S.F.	1-9,21-28,29-43,66-74
80'-99'	5,400 S.F.	10,20-49,59,75-86,90-95
100'+	5,750 S.F.	60-65,87-89

SCM CONVERSION SEQUENCE

- WHEN ALL CONTRIBUTORY AREAS TO THE STORMWATER CONTROL MEASURE (SCM) HAVE BEEN STABILIZED CONTACT THE EROSION CONTROL OFFICER FOR PERMISSION TO CONVERT THE SEDIMENT BASIN TO A SCM.
- REMOVE ALL SEDIMENT FROM THE BASIN AND RESTORE GRADES TO DESIGNED CONFIGURATION, IF NEEDED.
- CONSTRUCT FOREBAY DIVIDERS AS SHOWN.
- MAKE ANY REPAIRS, ETC. NECESSARY TO THE OUTLET STRUCTURE, OUTLET PIPE, EMERGENCY OVERFLOW, ETC. EXAMINE RIP-RAP TO SEE IF REFRESHING OR CLEANING OF ROCK IS NECESSARY.
- REMOVE SKIMMER AND CLOSE OUTLET VALVE.
- CONTACT EROSION CONTROL OFFICER FOR APPROVAL.
- CONTACT A LICENSED SURVEYOR FOR SURVEY OF AS-BUILT CONDITIONS. NOTIFY ENGINEER-OF-RECORD FOR PREPARATION OF AS-BUILT DRAWINGS.

Y:\Jobs\9900\Watkins Property\Documents\Reports\SCM Conversion Sequence.docx 2/15/21

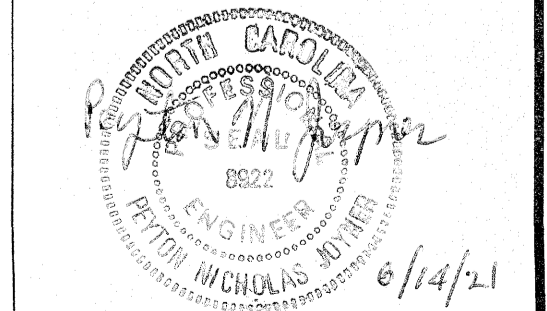
SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)  
 The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # 5-8824  
 The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # W-3784  
 The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.  
 City of Raleigh Public Utilities Department Permit #

GENERAL NOTES AND LEGENDS FOR KALAS FALLS SITUATED AT ROLESVILLE RD, ROLESVILLE WAKE COUNTY, NORTH CAROLINA FIRM # C-3881

JOB NUMBER:	9900
CHECKED BY:	JRH
DRAWN BY:	EDS
DATE:	9/19/2019

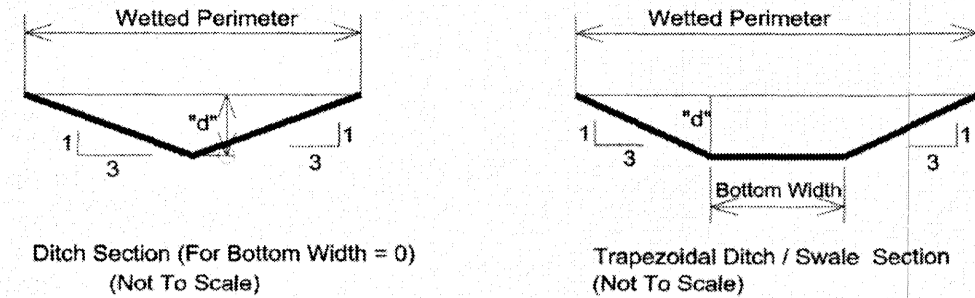
AMERICAN Engineering Associates-Southeast, P.A.  
 875 Walnut Street, Suite 360  
 Cary, NC 27511  
 919-469-1101





**Kalas PUD Subd Ditch & Swale Calcs-**

Rev. 11/09/20 SWALES 10, & 17 REMOVED  
Corrected Wetted Perimeter Equation



SWALE DRAINAGE CHART-PHASE ONE													
Ditch I.D.	D.A., Ac.	C	iso, in/hr	Q <sub>50</sub> , cfs	Left Side Slope, Z:1	Right Side Slope, Z:1	Avg. Ditch Slope, %	Bottom Width	Ditch Lining	Manning, n*	Q <sub>50</sub> Flow Depth, ft	Flow Velocity V10, fps	Calc. Shear Stress, psf
DS 1	0.31	0.30	7.22	0.66	3.00	3.00	3.8	0.00	Reinforced Mesh(Grass)	0.022	0.26	3.20	0.62
DS 2A	1.58	0.40	7.22	4.56	3.00	3.00	5.5	2.00	RipRap	0.037	0.38	3.88	1.29
DS 5A	1.18	0.40	7.22	3.30	3.00	3.00	5.5	2.00	RipRap	0.037	0.32	3.56	1.11
DS 2C	0.74	0.40	7.22	2.14	3.00	3.00	4.7	2.00	RipRap	0.037	0.26	2.93	0.77
DS 2D	3.32	0.40	7.22	9.59	3.00	3.00	2.7	2.00	RipRap	0.037	0.69	3.43	0.94
DS 3A	0.30	0.45	7.22	0.99	3.00	3.00	2.5	0.00	Reinforced Mesh(Grass)	0.022	0.35	3.18	0.55
DS 3B	0.95	0.48	7.22	3.29	3.00	3.00	1.5	1.00	Reinforced Mesh(Grass)	0.022	0.43	3.37	0.40
DS 3C	2.20	0.44	7.22	6.99	3.00	3.00	0.5	4.00	Reinforced Mesh(Grass)	0.022	0.50	5.52	0.16
DS 4A	1.40	0.44	7.22	4.45	3.00	3.00	0.5	2.00	Reinforced Mesh(Grass)	0.022	0.53	2.37	0.16
DS 4B	0.70	0.46	7.22	2.32	3.00	3.00	0.7	2.00	Reinforced Mesh(Grass)	0.022	0.34	2.22	0.15
DS 5A	2.40	0.32	7.22	5.54	3.00	3.00	1.8	2.00	Reinforced Mesh(Grass)	0.022	0.42	3.99	0.48
DS 5B	3.60	0.32	7.22	8.32	3.00	3.00	5.8	2.00	RipRap	0.037	0.50	4.69	1.83
DS 5C	6.00	0.33	7.22	14.30	3.00	3.00	2.0	2.00	RipRap	0.037	0.85	3.68	1.06
DS 6A	1.18	0.44	7.22	3.75	3.00	3.00	4.5	1.00	RipRap	0.037	0.45	3.59	1.26
DS 6B	2.21	0.44	7.22	7.02	3.00	3.00	4.5	2.00	RipRap	0.037	0.50	4.11	1.40
DS 6C	3.95	0.46	7.22	13.12	3.00	3.00	1.7	3.00	RipRap	0.037	0.75	3.32	0.80
DS 7A	0.20	0.45	7.22	0.65	3.00	3.00	1.2	0.00	Reinforced Mesh(Grass)	0.022	0.32	2.08	0.24
DS 7B	0.51	0.48	7.22	1.77	3.00	3.00	12.0	0.00	RipRap	0.037	0.37	4.29	2.77
DS 7C	0.78	0.46	7.22	2.59	3.00	3.00	4.0	0.00	RipRap	0.037	0.52	3.12	1.30
DS 7D	2.05	0.41	7.22	6.07	3.00	3.00	1.2	2.00	RipRap	0.037	0.55	3.04	0.41
DS 8A	0.52	0.38	7.22	1.43	3.00	3.00	4.0	0.00	Reinforced Mesh(Grass)	0.022	0.35	3.98	0.86
DS 8B	1.87	0.40	7.22	5.40	3.00	3.00	7.0	0.00	RipRap	0.037	0.57	4.37	2.47
DS 9	2.18	0.34	7.22	5.35	3.00	3.00	1.5	1.00	Reinforced Mesh(Grass)	0.022	0.54	3.84	0.51
DS 10	1.25	0.48	7.22	4.33	3.00	3.00	5.2	1.00	RipRap	0.037	0.47	3.93	1.53
DS 11	0.95	0.45	7.22	3.09	3.00	3.00	0.8	2.00	Reinforced Mesh(Grass)	0.022	0.39	2.54	0.19
DS 12	2.33	0.31	7.22	5.22	3.00	3.00	1.0	3.00	Reinforced Mesh(Grass)	0.022	0.41	3.07	0.26
DS 12A	0.95	0.45	7.22	3.09	3.00	3.00	0.8	2.00	Reinforced Mesh(Grass)	0.022	0.39	2.54	0.19
DS 13	1.05	0.45	7.22	3.41	3.00	3.00	7.0	1.00	RipRap	0.037	0.40	4.16	1.75
DS 14A	0.76	0.50	7.22	2.79	3.00	3.00	7.0	1.00	RipRap	0.037	0.35	3.86	1.53
DS 14B	0.90	0.46	7.22	2.94	3.00	3.00	4.0	0.00	RipRap	0.037	0.55	3.24	1.37
DS 15A	0.05	0.20	7.22	0.07	3.00	3.00	1.5	0.00	Reinforced Mesh(Grass)	0.022	0.15	1.39	0.14
DS 15B	0.28	0.38	7.22	0.77	3.00	3.00	9.0	0.00	RipRap	0.037	0.30	3.23	1.68
DS 15C	1.07	0.48	7.22	3.71	3.00	3.00	1.5	1.00	Reinforced Mesh(Grass)	0.022	0.46	3.50	0.43
DS 16	3.56	0.42	7.22	10.80	3.00	3.00	4.0	3.00	RipRap	0.037	0.55	4.29	1.37
DS 18A	0.44	0.44	7.22	1.75	3.00	3.00	1.0	0.00	Reinforced Mesh(Grass)	0.022	0.49	3.52	0.31
DS 18B	0.61	0.49	7.22	2.16	3.00	3.00	6.0	0.00	RipRap	0.037	0.46	3.52	1.72
DS 18C	0.67	0.30	7.22	1.45	3.00	3.00	1.0	0.00	Reinforced Mesh(Grass)	0.022	0.46	2.42	0.29
DS 18D	2.58	0.29	7.22	5.40	3.00	3.00	5.0	1.00	RipRap	0.037	0.52	4.08	1.62
DS 19	0.10	0.20	7.22	0.14	3.00	3.00	3.5	0.00	Reinforced Mesh(Grass)	0.022	0.15	2.12	0.33
DS 20	0.76	0.46	7.22	2.52	3.00	3.00	2.5	0.00	Reinforced Mesh(Grass)	0.022	0.47	3.88	0.73
DS 21A	0.80	0.54	7.22	3.12	3.00	3.00	1.3	1.00	RipRap	0.037	0.55	2.15	0.45
DS 21B	1.75	0.54	7.22	6.82	3.00	3.00	8.0	2.00	RipRap	0.037	0.52	5.16	2.60
DS 21C	2.13	0.53	7.22	8.15	3.00	3.00	12.0	2.00	RipRap	0.037	0.42	6.09	3.14
DS 21D	2.22	0.51	7.22	8.17	3.00	3.00	20.0	2.00	RipRap	0.037	0.36	7.26	4.54
DS 21E	2.52	0.48	7.22	9.10	3.00	3.00	4.3	3.00	RipRap	0.037	0.50	4.22	1.34
DS 22A	0.46	0.34	7.22	1.13	3.00	3.00	2.3	0.00	Reinforced Mesh(Grass)	0.022	0.35	3.05	0.50
DS 22B	1.90	0.28	7.22	3.84	3.00	3.00	1.0	2.00	Reinforced Mesh(Grass)	0.022	0.41	2.92	0.26
DS 23A	0.20	0.2	7.22	0.29	3.00	3.00	15.0	0.00	RipRap	0.037	0.20	3.17	1.87
DS 23B	1.15	0.46	7.22	3.82	3.00	3.00	2.0	1.00	Reinforced Mesh(Grass)	0.022	0.43	3.90	0.54
DS 23C	2.20	0.49	7.22	7.78	3.00	3.00	6.0	1.00	RipRap	0.037	0.59	4.80	2.21

Shear Stress=6.24(d)(Slope)

American Green Product (SC1508N): 70% Agri Straw & 30% Coconut Fiber with net; n=0.22; Allowable Shear = 1.8 lb/s.f.

\*Grass-Fescue Lined; n=0.030; Good for V10 <4.0 fps Ref. Chow, V.T., Open Channel Hydraulics

\*Class B Riprap, C' slope, flow d < 2'; n=0.37

\*Coconut Fiber with net; n=0.02 (Mesh)

\* Reinforced mesh linings where required per schedule above shall be North American Green model SC1508N or engineer approved equal and stabilized per manufacturers

**Phase 1 Lot Areas**

LOT NUMBER	SQUARE FOOTAGE(SF)	LOT NUMBER	SQUARE FOOTAGE(SF)
1	12,302	38	26,069
2	11,823	39	13,268
3	12,685	40	11,807
4	11,611	41	11,611
5	12,472	42	11,416
6	11,215	43	11,387
7	10,485	44	9,386
8	9,760	45	10,035
9	12,514	46	9,087
10	16,836	47	9,103
11	26,326	48	10,702
12	23,748	49	13,150
13	14,031	50	13,304
14	10,240	51	14,902
15	10,668	52	16,621
16	11,948	53	22,782
17	12,191	54	30,245
18	12,330	55	20,316
19	11,660	56	16,282
20	12,445	57	15,912
21	13,301	58	15,280
22	11,703	59	15,719
23	12,106	60	17,893
24	12,401	61	17,189
25	13,653	62	21,253
26	11,390	63	23,387
27	11,536	64	24,741
28	13,024	65	21,648
29	10,884	66	10,644
30	12,218	67	9,322
31	11,794	68	10,220
32	11,492	69	11,248
33	12,321	70	16,193
34	10,672	71	15,691
35	12,289	72	15,229
36	22,066	73	13,593
37	21,627	74	12,671

LOT NUMBER	SQUARE FOOTAGE(SF)	LOT NUMBER	SQUARE FOOTAGE(SF)
75	13,603	142	11,085
76	13,659	143	9,616
77	14,283	144	8,250
78	14,098	145	8,220
79	12,800	146	8,950
80	12,800	147	9,988
81	12,549	148	11,480
82	10,868	149	12,244
83	11,715	150	12,929
84	13,687	151	11,150
85	11,867		
86	12,952		
87	15,621		
88	16,829		
89	20,972		
90	26,460		
91	23,983		
92	25,886		
93	16,970		
94	13,478		
95	13,514		
96	14,310		
97	13,261		
98	13,988		
99	12,571		
100	9,789		
101	9,769		
102	11,085		
103	9,616		
104	8,250		
105	8,220		
106	8,950		
107	9,988		
108	11,480		
109	12,244		
110	12,929		
111	11,150		

LOT NUMBER	SQUARE FOOTAGE(SF)
252	8,341
253	7,912
254	7,743
255	7,745
256	7,750
257	7,750
258	7,750
259	7,753
260	7,747
261	9,168
262	11,491
263	10,075
264	10,075
265	10,075
266	10,075
267	10,075
268	10,075
269	10,075

PIPING & STRUCTURES SUMMARY-PHASE ONE									
Downstream Structure	Upstream Structure	Pipe Size (in.)	Length (ft)	Slope (%)	Downstream Rim Elev (ft)	Upstream Rim Elev (ft)	Downstream Invert (ft)	Upstream Invert (ft)	Q(10) Downstream Velocity (ft/s)
CB 104	CB 113	24	41.00	1.46	375.40	375.40	370.83	371.43	3.11
CB 104A	CB 104	24	9.00	0.56	375.41	375.40	370.78	370.83	3.80
CB 113	CB 113A	18	9.00	0.56	375.40	375.41	371.63	371.68	0.87
CB 113	FES INLET 114	18	21.22	1.77	375.40	371.96	371.63	372.00	2.23
CB 115	CB 104 A	24	141.50	0.49	377.42	375.41	370.08	370.78	3.64
CB 115	CB 120	15	225.66	3.88	377.42	386.20	371.73	380.48	10.41
CB 116	CB 117	15	45.96	1.00	386.20	388.01	381.29	381.75	3.31
CB 117	CB 118	15	27.00	1.00	388.01	388.01	381.95	382.22	2.92
CB 118	CB 119	15	45.96	1.00	388.01	388.76	382.42	382.88	2.11
CB 119	CB 119 A	15	41.00	1.00	388.76	388.76	383.08	383.49	2.05
CB 120	CB 116	15	41.00	1.00	386.20	386.20	380.68	381.09	3.60
CB 120	CB 121	15	45.95	0.50	386.20	387.58	381.79	382.02	4.10
CB 121	CB 122								

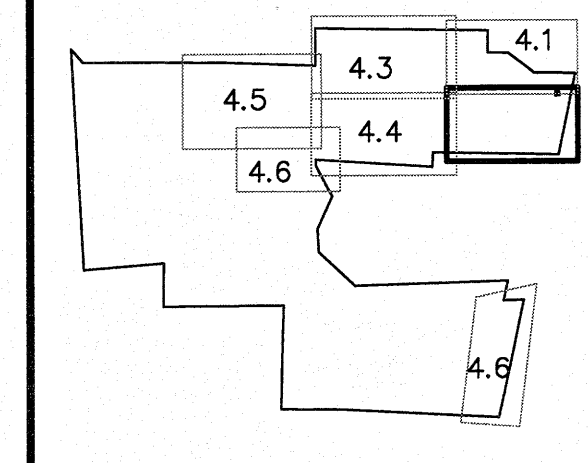




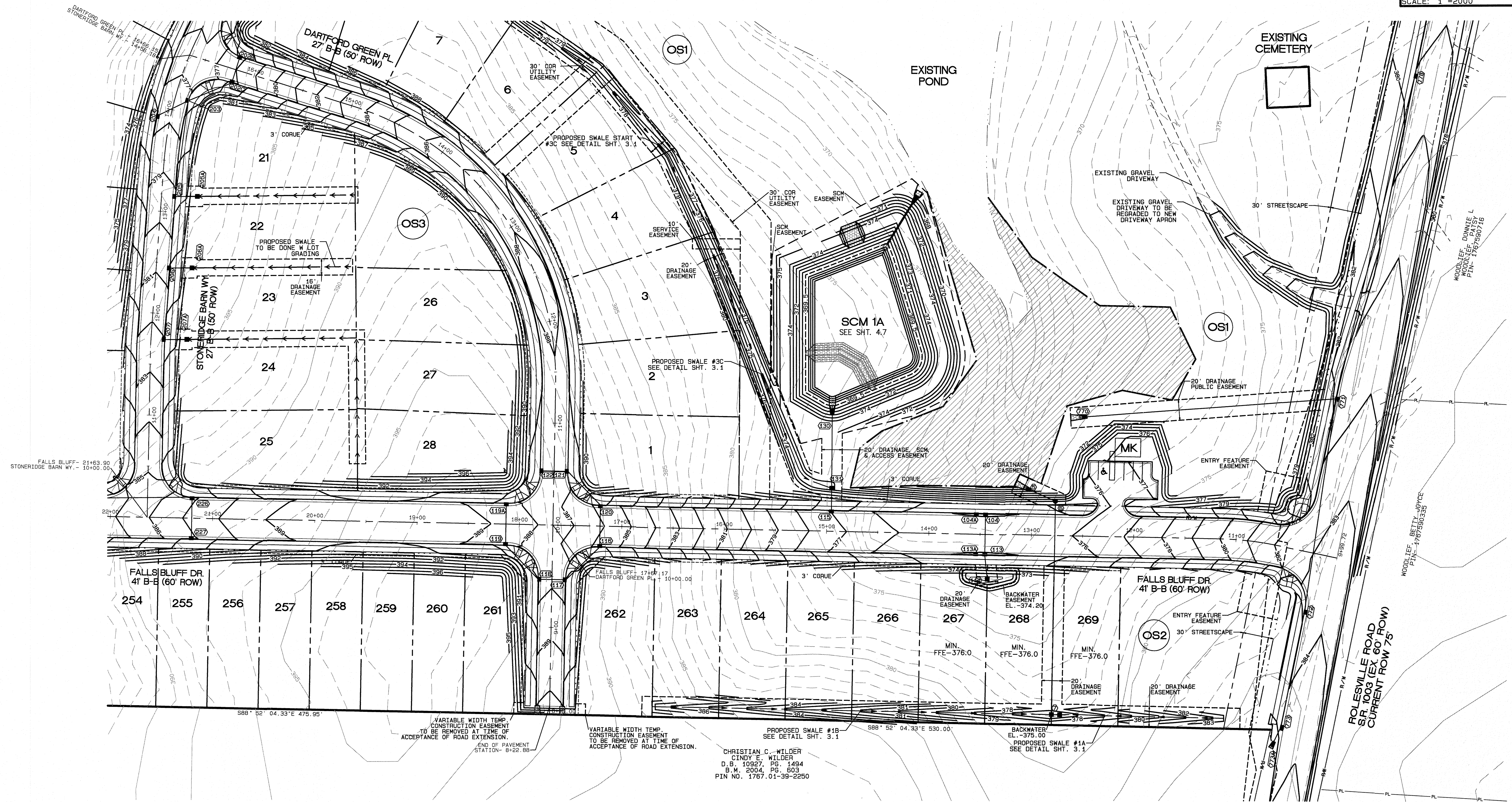








SCALE: 1"=2000'



**PROPOSED LINETYPE LEGEND**

- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3' / 5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- ===== PROPOSED 30" CURB AND GUTTER
- ←←←←← PROPOSED SWALES (AT TIME OF LOT GRADING)
- FLOWLINE OF INTIITAL SWALES CONSTRUCTED
- PROPOSED 100 YR.
- PROPOSED 2' BLDG. RESTRICTION LINE

**EXISTING LINETYPE LEGEND**

- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**UTILITY LEGEND**

- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- ▼ PROPOSED FLARED END SECTION

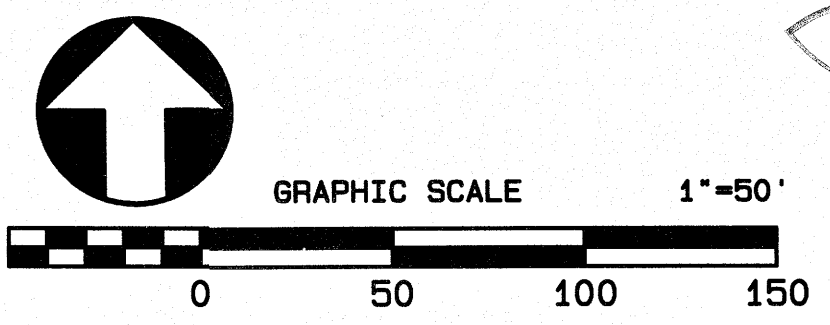
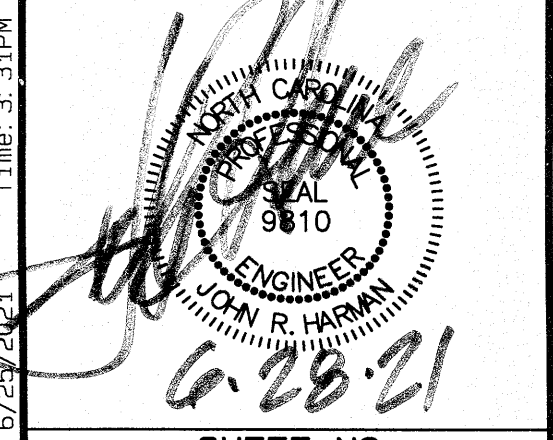
CHRISTIAN C. WILDER  
CINDY E. WILDER  
D.B. 10927 PG. 1494  
B.M. 2004 PG. 603  
PIN NO. 1767.01-39-2250

NO.	DATE	REVISION
1	05-10-21	MOORE ADJUSTMENTS PER CONSULTANT REVIEW
2	05-10-21	PLAN REVISIONS PER CONSULTANT REVIEW
3	05-25-21	FINAL SET

**GRADING AND DRAINAGE  
PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

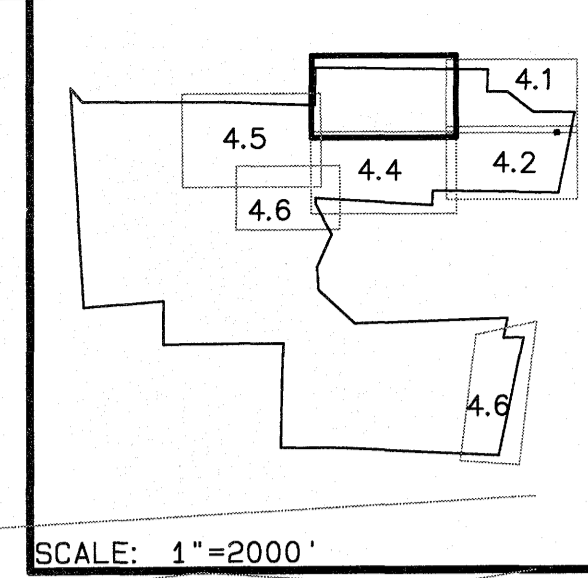
**AMERICAN  
Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd. Ste. 450  
Raleigh, NC 27607 919-469-1101



SHEET NO.  
**4.2**

Plot Date: 6/25/2021 Time: 3:31PM FILE: Z:\Jobs\9900\Works\Property.dwg\Bases Map\Kalas Falls Base Phase 1.dwg





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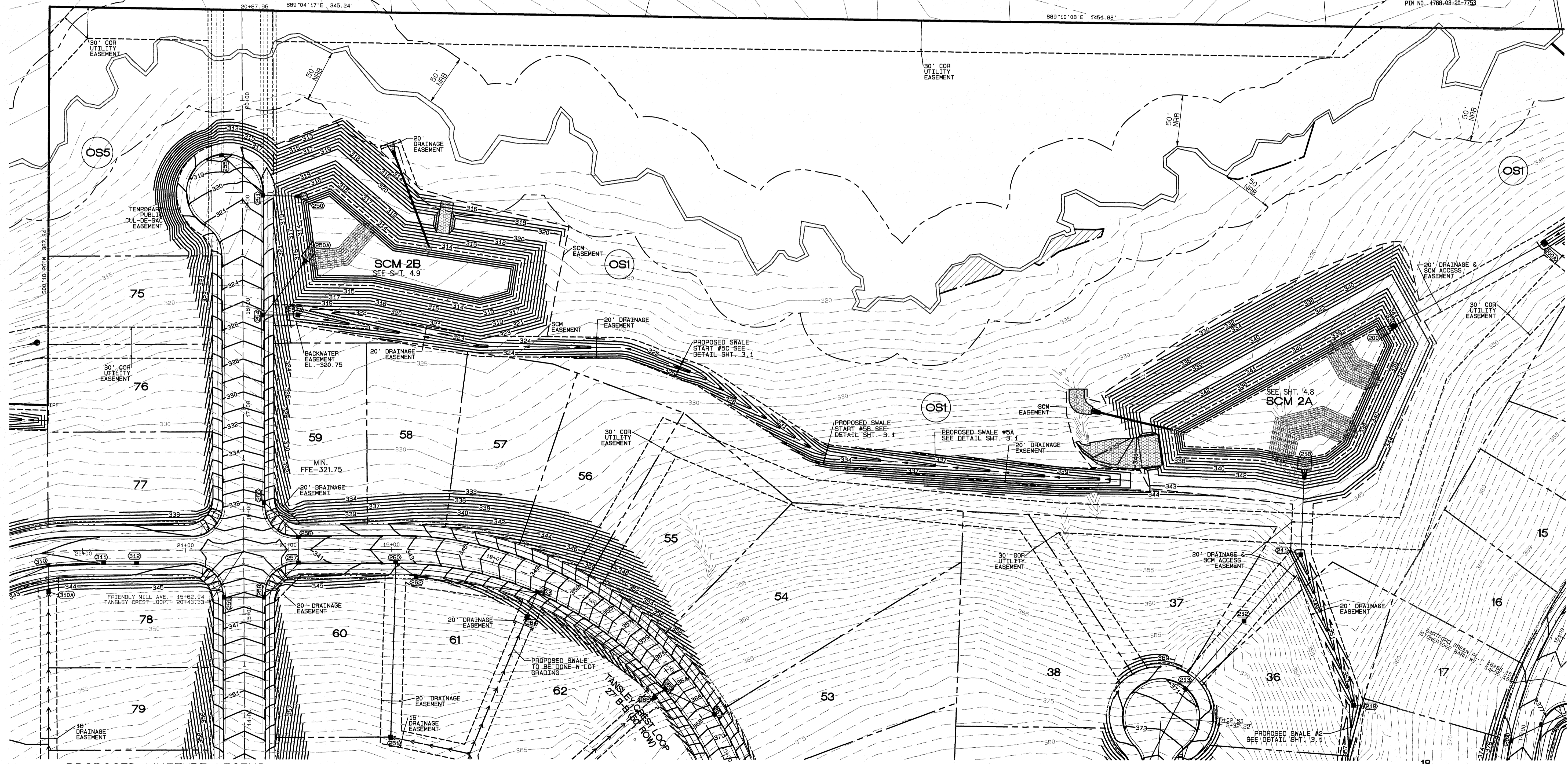
JOSEPH E. WALL  
BETTY R. GUNZ  
ZONING: R-30  
D.B. 5178, PG. 858  
B.M. 1985, PG. 1805  
PIN NO. 1768.03-21-6907  
REAL ESTATE ID: 0060992

DONALD B. BEARCE  
JOYCE B. BEARCE  
D.B. 3875, PG. 317  
LOT 9  
B.M. 1986, PG. 4914  
PIN NO. 1768.03-10-8786

SPENCER MAYNARD AYCOCK  
CAROLYN P. AYCOCK  
D.B. 5506, PG. 121  
LOT 7  
B.M. 1986, PG. 1914  
PIN NO. 1768.03-20-1771  
SINGLE FAMILY

JONATHAN SCOTT EDWARDS  
CONNIE MALLER EDWARDS  
D.B. 6297, PG. 502  
LOT 7  
B.M. 1986, PG. 1914  
PIN NO. 1768.03-20-4762

DANIEL E. LINE  
LARA D. LINE  
D.B. 9286, PG. 1981  
LOT 6  
B.M. 1986, PG. 1483  
PIN NO. 1768.03-20-7753



**PROPOSED LINETYPE LEGEND**

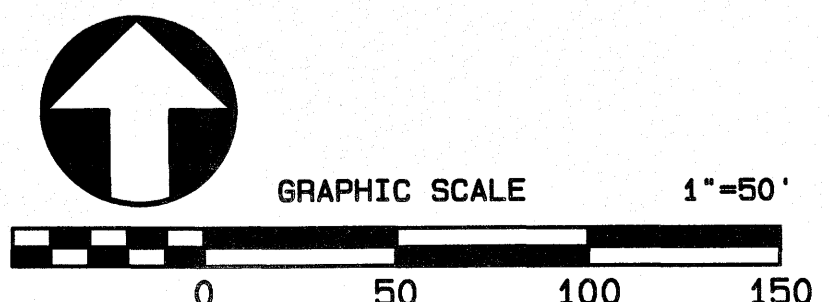
- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3' / 5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED SWALES (AT TIME OF LOT GRADING)
- FLOWLINE OF INITIAL SWALES CONSTRUCTED
- PROPOSED 100 YR.
- PROPOSED 2' BLDG. RESTRICTION LINE

**EXISTING LINETYPE LEGEND**

- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50" NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**UTILITY LEGEND**

- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- ▼ PROPOSED FLARED END SECTION



NO.	DATE	REVISION	COMMENTS
1	04-20-20	MANOR ADJUSTMENTS PER	
2	05-10-21	PLAN REVISIONS PER CONSULTANT REVIEW	
3	06-13-21	FINAL SET	

**GRADING AND DRAINAGE PHASE 1**

FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd. Ste. 450  
Raleigh, NC 27607 919-469-1101

Professional Engineer Seal for J. R. Herman, No. 9810, State of North Carolina. Date: 6.15.21. Includes the text 'SHEET NO. 4.3'.

FILE: Z:\Jobs\9900\Map\K.F.L.L.S Property\K.F.L.L.S Property\K.F.L.L.S Property\K.F.L.L.S Base Map\K.F.L.L.S Base Map Phase 1.dwg



**PROPOSED LINETYPE LEGEND**

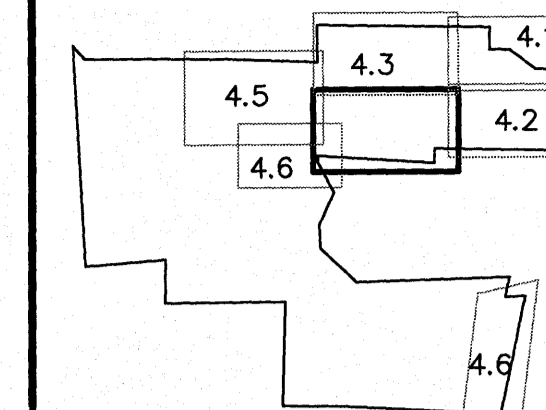
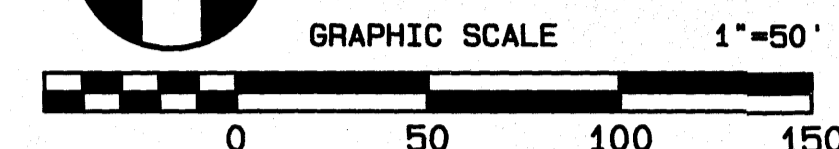
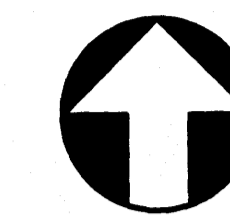
- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3' / 5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- ←←←←← PROPOSED SWALES (AT TIME OF LOT GRADING)
- ←←←←← FLOWLINE OF INITIAL SWALES CONSTRUCTED
- PROPOSED 100 YR.
- PROPOSED 2' BLDG. RESTRICTION LINE

**EXISTING LINETYPE LEGEND**

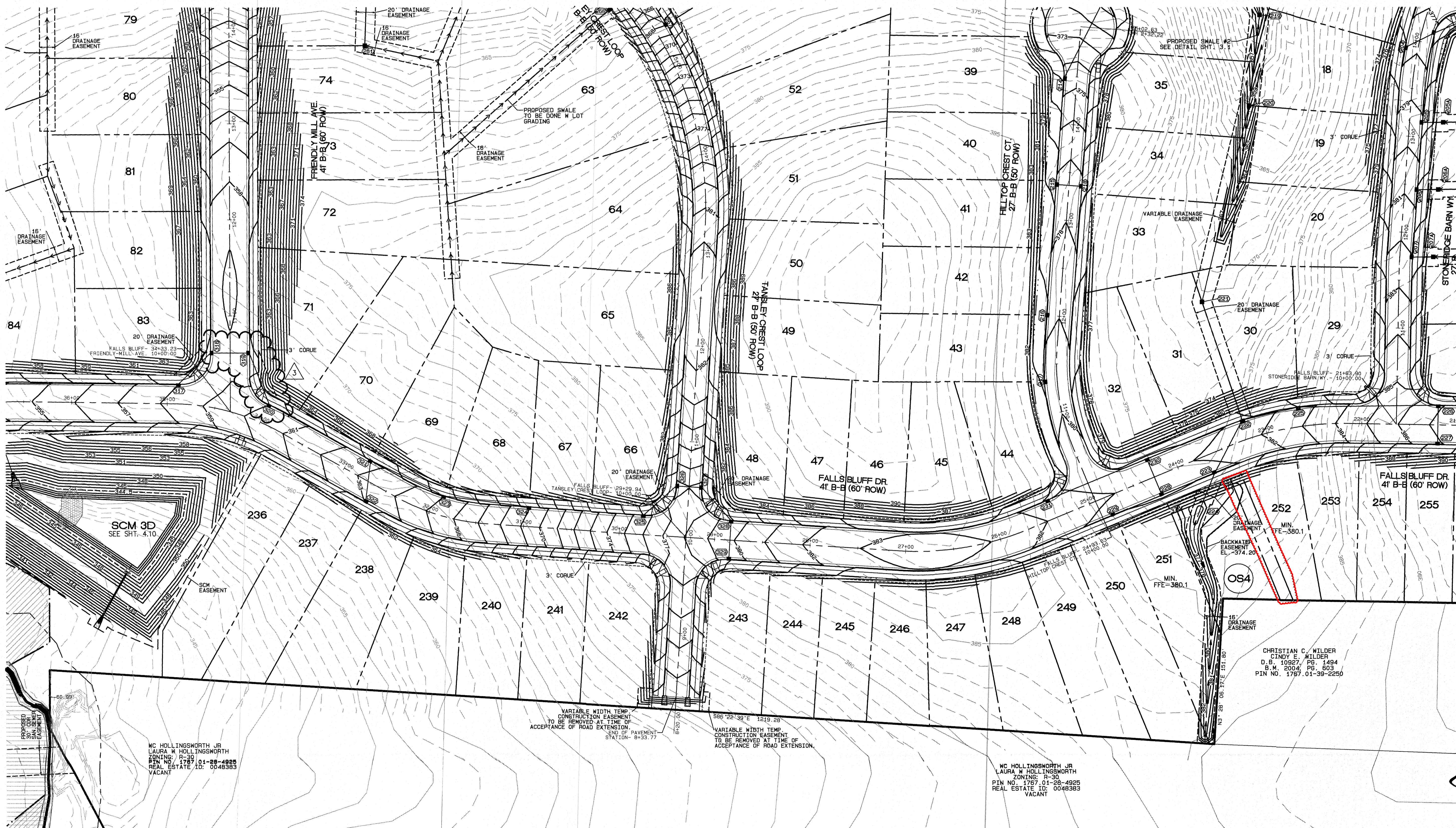
- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**UTILITY LEGEND**

- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- ▽ PROPOSED FLARED END SECTION



SCALE: 1"=2000'



No.	DATE	REVISION
1	05-10-21	PLAN REVISIONS PER TOR CONSULTANT REVIEW.
2	07-12-22	DRAINAGE REVISION
3	07-12-22	DRAINAGE REVISION
4	12-13-23	LOT AREA CHANGES TO OS4, USA, LOSS TO 11, AND 252

**GRADING AND DRAINAGE PHASE 1**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

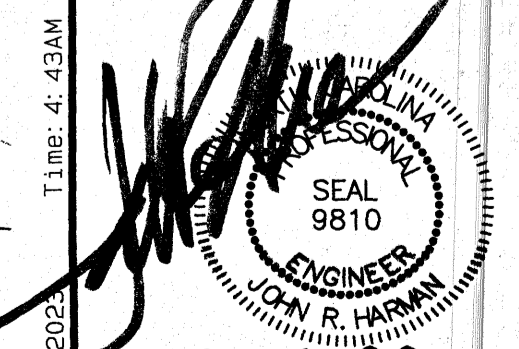
**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd. Ste. 450  
 Raleigh, NC 27607 919-469-1101

CHRISTIAN C. WILDER  
 CINDY E. WILDER  
 D.B. 10927, PG. 1494  
 B.W. 2004, PG. 603  
 PIN NO. 1787.01-39-2250

12.13.23  
 SHEET NO.  
**4.4**

NC HOLLINGSWORTH JR  
 LAURA W HOLLINGSWORTH  
 ZONING: R-30  
 PIN NO. 1787.01-28-4925  
 REAL ESTATE ID: 0048383  
 VACANT

NC HOLLINGSWORTH JR  
 LAURA W HOLLINGSWORTH  
 ZONING: R-30  
 PIN NO. 1787.01-28-4925  
 REAL ESTATE ID: 0048383  
 VACANT



FILE: Z:\Jobs\9900\Watkins Property\dwg\Base Map\Kalas Falls Base Phase 1.dwg  
 Plot Date: 12/13/2023 Time: 4:43AM



**PROPOSED LINETYPE LEGEND**

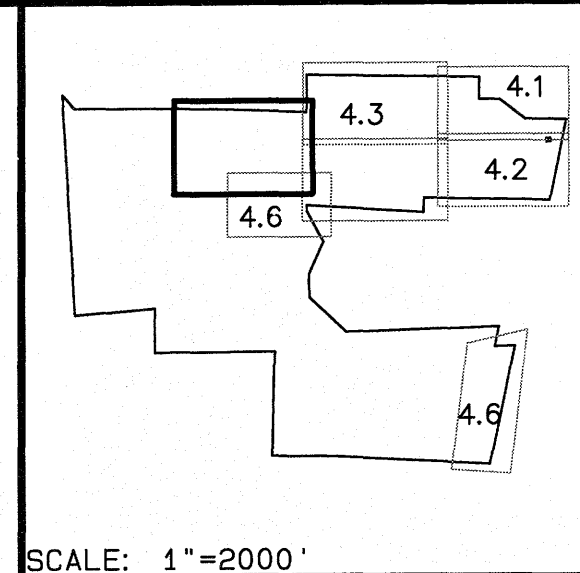
- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3'/5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- ===== PROPOSED 30" CURB AND GUTTER
- ←←←←← PROPOSED SWALES (AT TIME OF LOT GRADING)
- FLOWLINE OF INITIAL SWALES CONSTRUCTED
- PROPOSED 100 YR.
- PROPOSED 2' BLDG. RESTRICTION LINE

**EXISTING LINETYPE LEGEND**

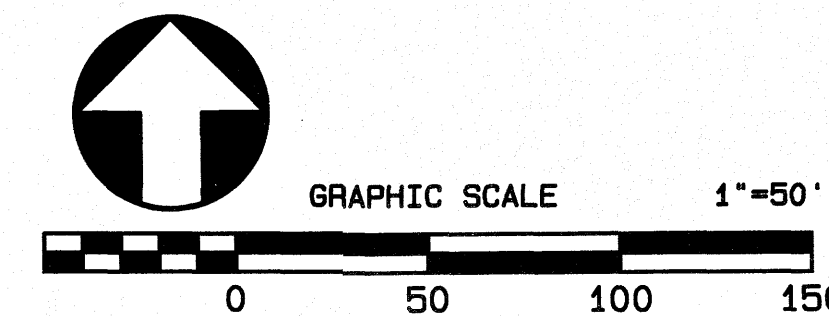
- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**UTILITY LEGEND**

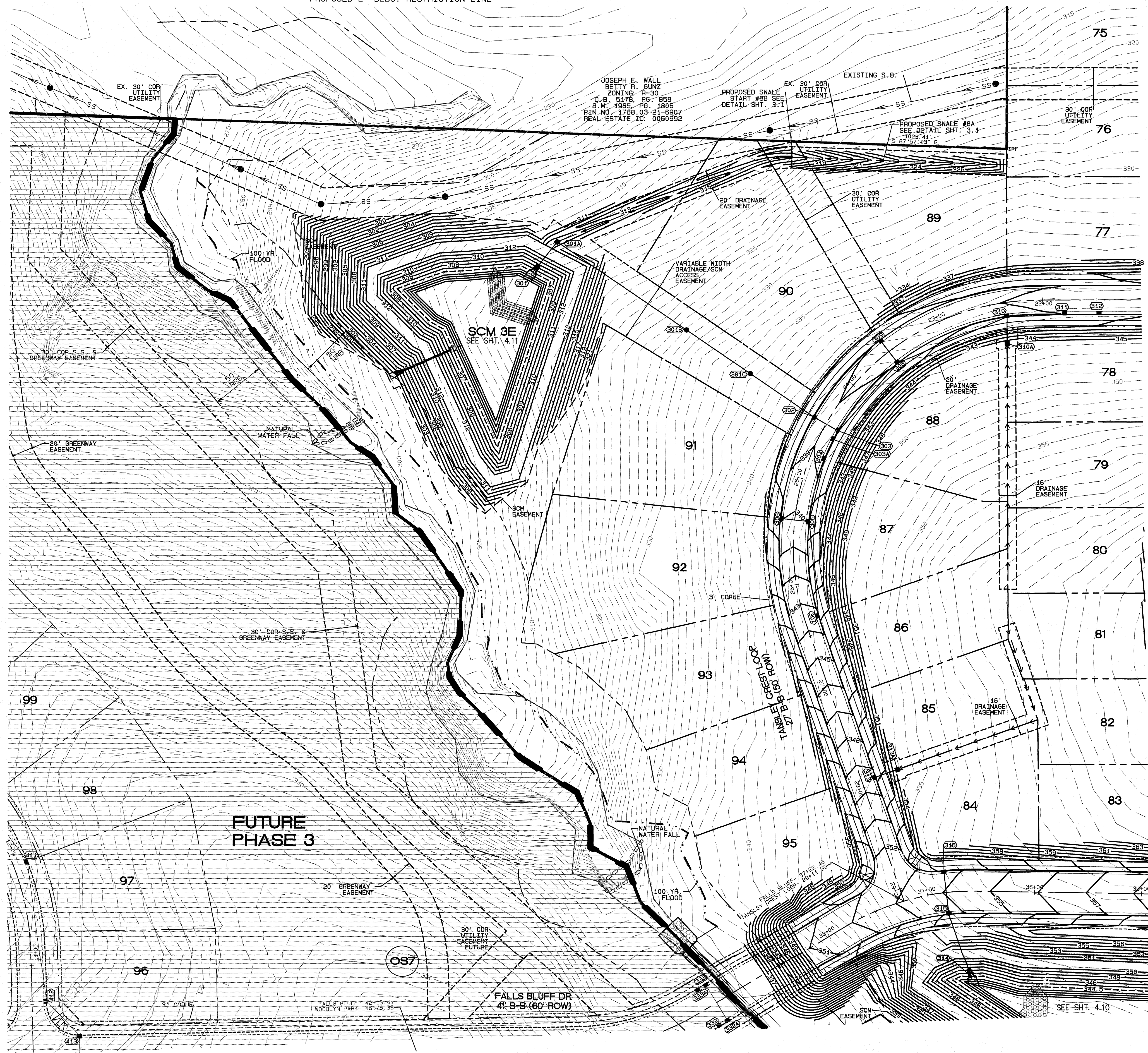
- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- ▤ PROPOSED FLARED END SECTION



SCALE: 1"=2000'



GENERAL NOTE:  
1. NO DRAINAGE IN THE PHASE 3 AREA WHICH INCLUDES THE CULVERT CROSSING IS TO BE CONSTRUCTED WITH THIS PHASE.



NO.	DATE	REVISION
1	05-13-21	REVISED PER TIGHT CONSULT REVIEW.
2	05-13-21	FINAL SET

**GRADING AND DRAINAGE PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

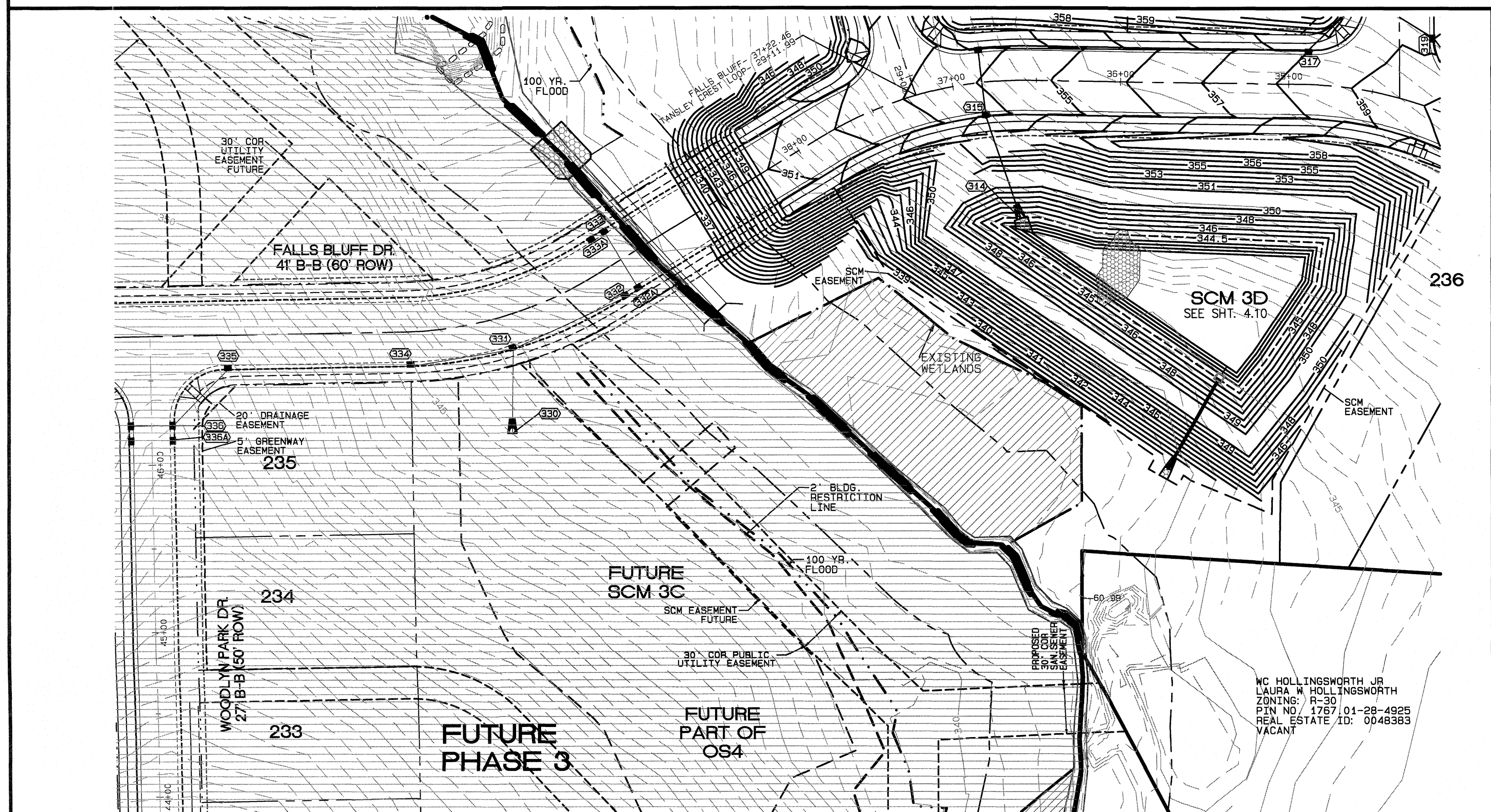
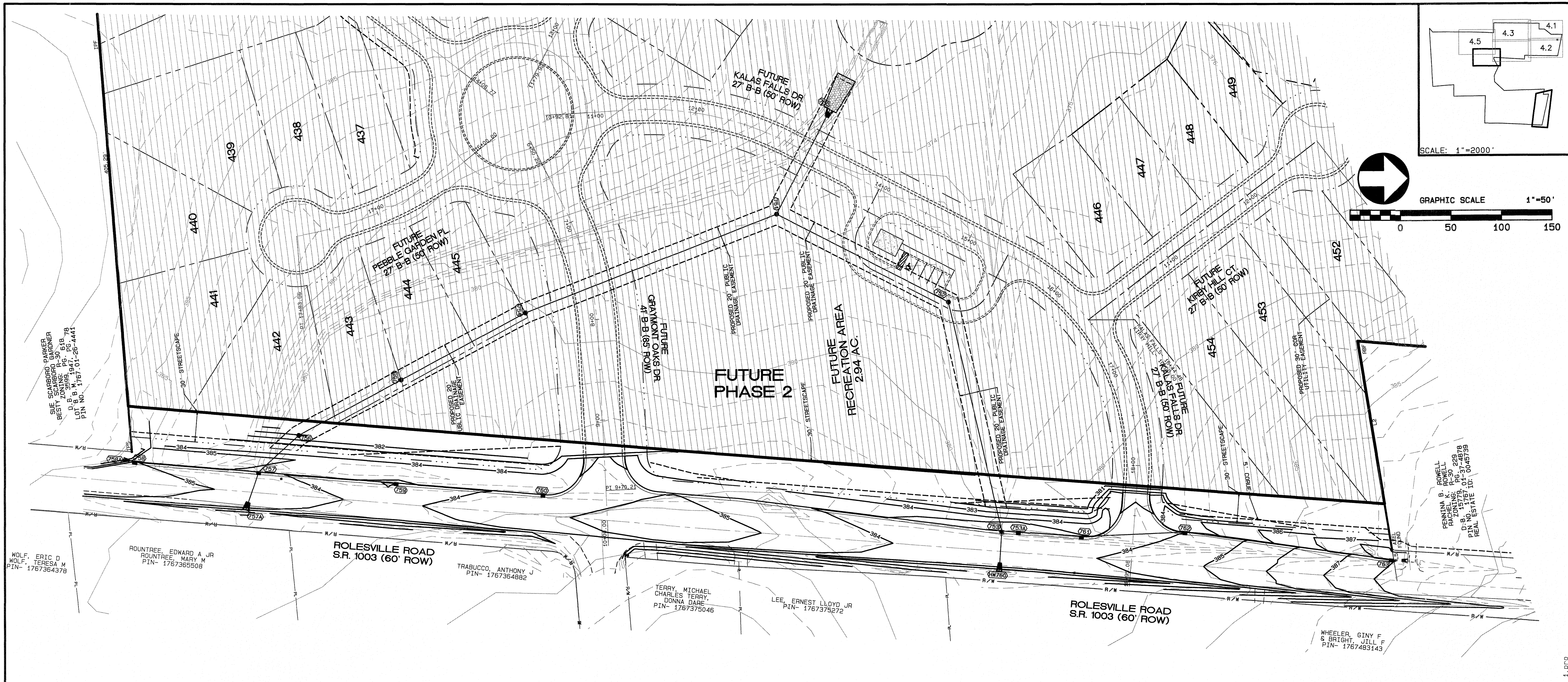
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CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd, Ste. 450  
Raleigh, NC 27607 919-469-1101

Plot Date: 6/15/2021 Time: 9:33AM  
FILE: Z:\jobs\9900\mkt\ins Property\dwg\Bas Map\Kalas Falls Base Phase 1.dwg

6.15.21  
SHEET NO.  
**4.5**



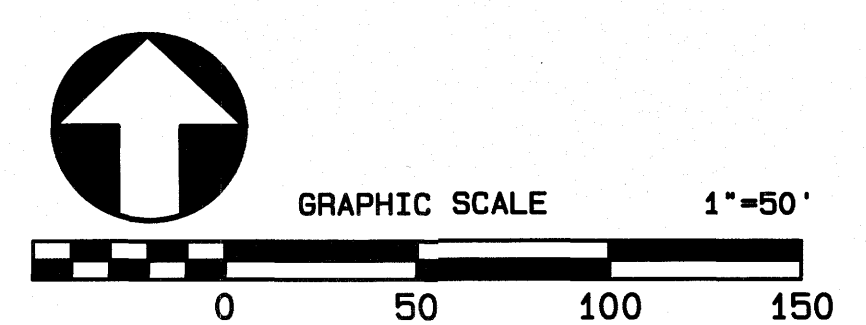


- PROPOSED LINETYPE LEGEND**
- PROPOSED BUILDING SETBACK
  - PROPOSED EASEMENT
  - PROPOSED 3' / 5' CORUE
  - PROPOSED RIGHT OF WAY
  - PROPOSED ROAD CL
  - PROPOSED 30" CURB AND GUTTER
  - ←←←←← PROPOSED SWALES (AT TIME OF LOT GRADING)
  - FLOWLINE OF INTIAL SWALES CONSTRUCTED
  - PROPOSED 100 YR.
  - PROPOSED 2' BLDG. RESTRICTION LINE
- EXISTING LINETYPE LEGEND**
- PROPERTY BOUNDARY
  - EXISTING TREE LINE
  - EXISTING WETLAND
  - EXISTING 50' NRB
  - CENTERLINE OF STREAM
  - EXISTING WATER ELEVATION
  - EXISTING RIGHT OF WAY

**GENERAL NOTE:**

- NO DRAINAGE IN THE PHASE 3 AREA WHICH INCLUDES THE CULVERT CROSSING IS TO BE CONSTRUCTED WITH PHASE 1.
- NO ADDITIONAL IMPROVEMENTS IN THE PHASE 2 AREA EXCEPT FOR ROLESVILLE RD. IMPROVEMENTS AND THE DRAINAGE OUTFALL ARE TO BE CONSTRUCTED WITH PHASE 1.

- UTILITY LEGEND**
- PROPOSED MANHOLE OR JUNCTION BOX
  - PROPOSED CATCH BASIN
  - PROPOSED YARD INLET
  - ▽ PROPOSED FLARED END SECTION



NO.	DATE	REVISION
1	05-10-21	PLAN REVISIONS PER CONSULTANT REVIEW
2	05-13-21	FINAL SET

**GRADING AND DRAINAGE PHASE 1**

FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**

American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd. Ste. 450  
Raleigh, NC 27607 919-469-1101

Professional Engineer Seal for North Carolina, License No. 9810, State Seal 19810.

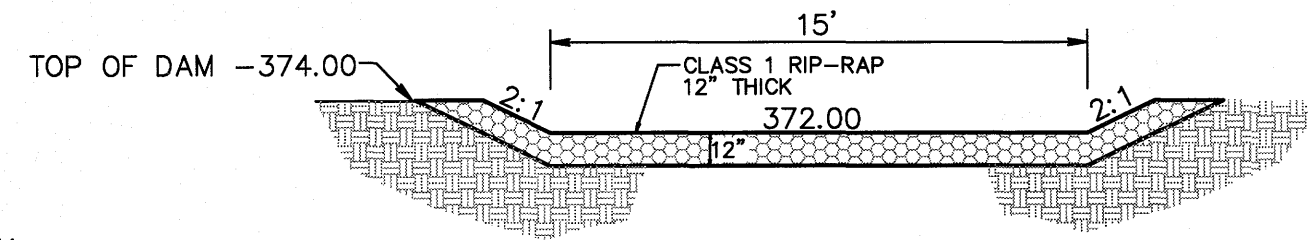
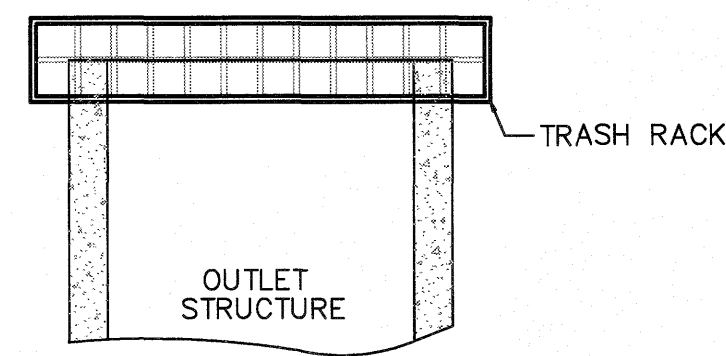
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SHEET NO.

Plot Date: 6/14/2021 Time: 7:32AM FILE: Z:\Jobs\9900\Wake\Ins\_Property\Map\Kallas Falls Base Phase 1.dwg



**TRASH RACK DETAIL**  
N.T.S.



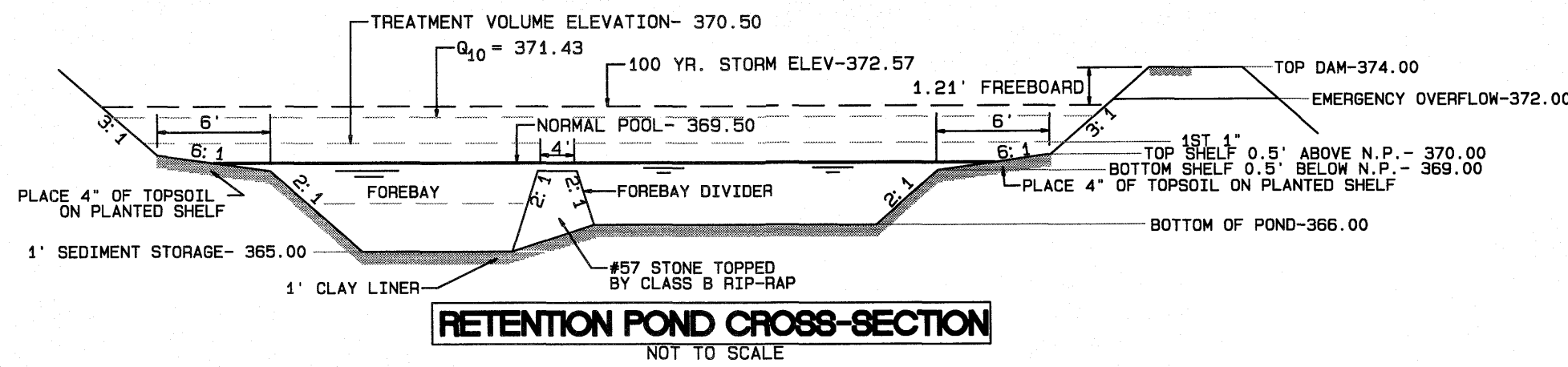
**EMERGENCY SPILLWAY  
CROSS-SECTION**

**TRASH RACK NOTES**

1. TRASH RACK SHALL BE 6" CLEAR OF STRUCTURE TOP AND SIDES. THE TRASH RACK NEED NOT COVER THE TREATMENT OUTLET PIPE.
2. IF STRUCTURE FEATURES ANY WEIR NOTCHES THE TRASH RACK WILL EXTEND 5" BELOW THE NOTCHES. (SEE CROSS-SECTION OF THE OUTLET STRUCTURE.)
3. TRASH RACK SHALL BE FASTENED TO EACH SIDE OF THE STRUCTURE AT AT LEAST 2 POINTS. IT SHALL BE EASILY REMOVED FOR MAINTENANCE OR ENTRY INTO THE STRUCTURE.
4. TRASH RACK SHALL ACCOMMODATE VALVE SHAFT THROUGH AN OPENING.
5. TRASH RACK SHALL BE MADE OF DURABLE MATERIAL WHICH WILL NOT RUST OR DETERIORATE IN SUNLIGHT.
6. MAX. OPENING IN TRASH RACK SHALL BE 5"x5".
7. TOP OF TRASH RACK SHALL HAVE A GRID OF BARS (MAX. 6"x6").

**WET POND #1A**

BOTTOM EL- 366.00  
NORMAL POOL- 369.50  
TOP OF DAM- 374.00



**RETENTION POND CROSS-SECTION**  
NOT TO SCALE

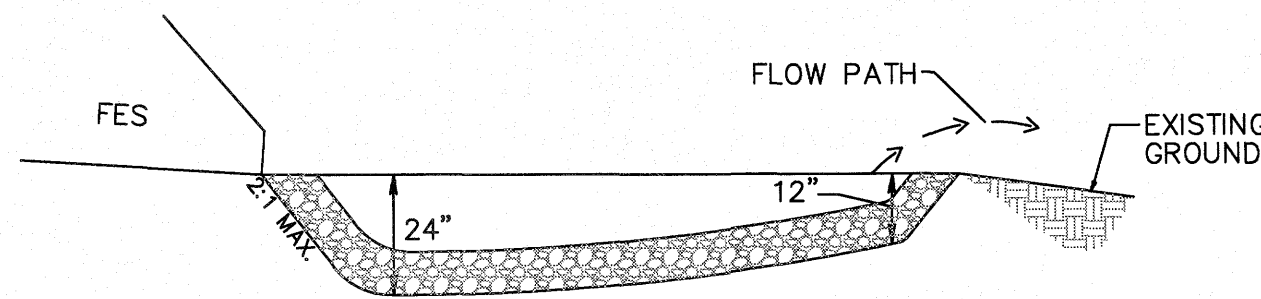
**PLANT LIST LITTORAL SHELF PLANT SCHEDULE:**

SHALLOW LAND (HERB.)			
EF	EUPATORIUM FISTRULOSUM	JOE PYE WEED	4-6" POT @ 3' SPACING
HC	HIBISCUS COCCINEA	SCARLET ROSE MALLOW	4-6" POT @ 3' SPACING
CG	CHELONE GLABRA	WHITE TURTLEHEAD	4-6" POT @ 3' SPACING
LC	LOBELIA CARDINALIS	CARDINAL FLOWER	4-6" POT @ 3' SPACING
SHALLOW WATER (HERB.)			
JE	JUNCUS EFFUSES	SOFTTRUSH	4-6" POT @ 3' SPACING
AS	ACORUS SPP	SWEET FLAG	4-6" POT @ 3' SPACING
IV	IRIS VERSICOLOR	BLUE FLAG IRIS	4-6" POT @ 3' SPACING
PC	PONTEDERIA CORDATA	PECKEREL WEED	4-6" POT @ 3' SPACING
PV	PELTANDRA VIRGINICA	ARROW ARUM	4-6" POT @ 3' SPACING

**LANDSCAPE PLAN:**

SHALLOW LAND= 1,241 sf (USE 310 PLANTS FROM LIST ABOVE)  
SHALLOW WATER= 1,170 sf (USE 292 PLANTS FROM LIST ABOVE)  
USE EQUAL NUMBER OF PLANTS FROM LIST ABOVE

CALCULATION: 50 PLANTS PER 200 SF



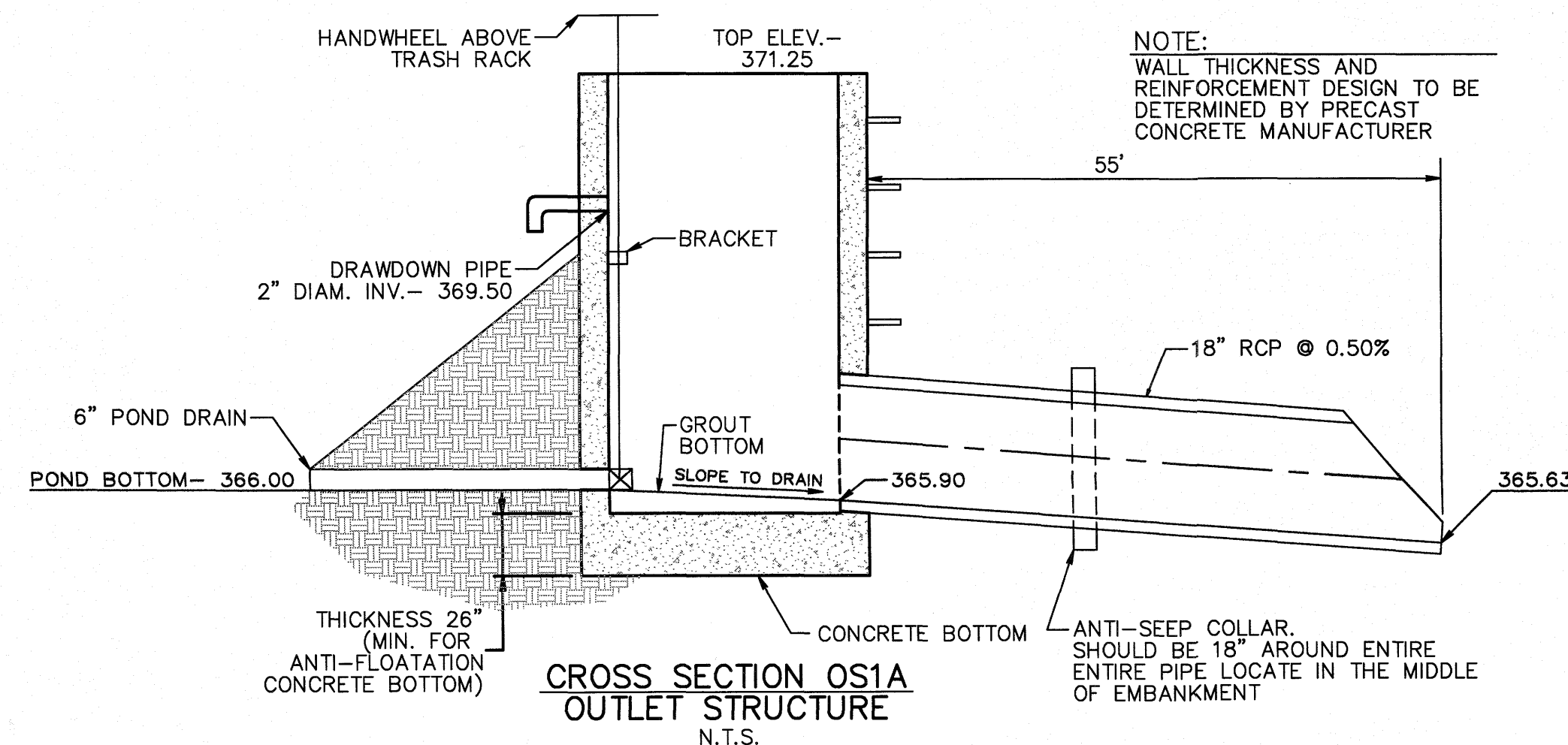
**OS1A RIP-RAP OUTLET DETAIL**  
N.T.S.

**OUTLET STRUCTURE GENERAL NOTES**

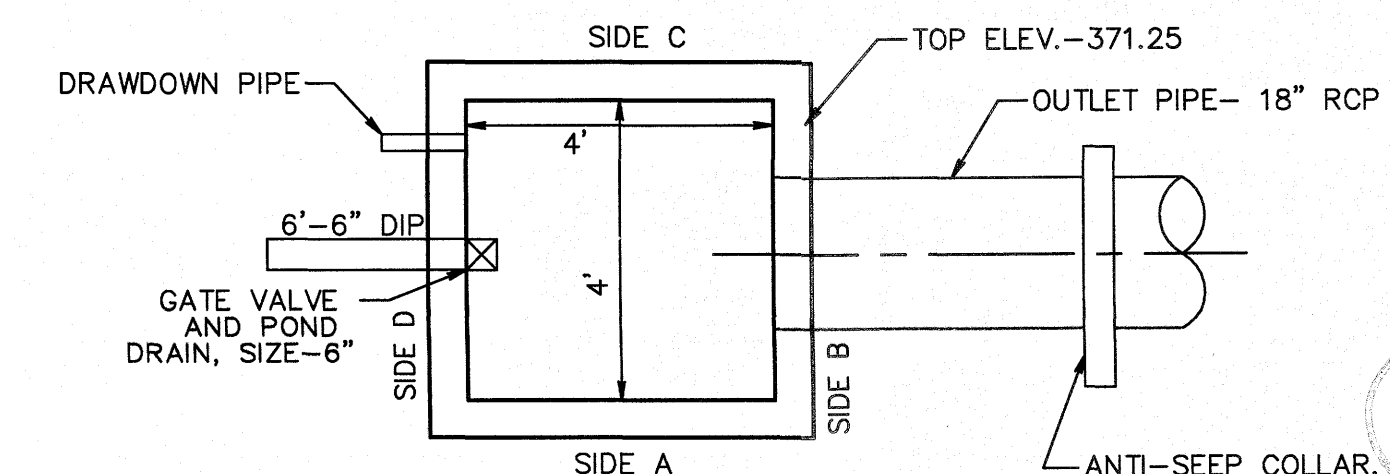
1. OUTLET STRUCTURE ELEVATIONS SHOWN ON THE DETAILS ON THIS SHEET ARE CRITICAL AND MUST BE WITHIN 0.02' OF THAT SHOWN. IF OUTLET STRUCTURES ARE PRE-CAST OFF-SITE, THE HOLE FOR THE OUTLET PIPE SHALL BE ENLARGED TO ALLOW UP TO 0.3' OF VERTICAL MOVEMENT. WHEN INSTALLED, THE EXCESS OPENING SHALL BE FILLED WITH GROUT.
2. THE OUTLET STRUCTURE SHALL HAVE A TRASH RACK COVERING THE OPENINGS. SUCH TRASH RACK SHALL BE 6" OUT FROM THE OPENING AND SHALL HAVE A MAXIMUM OPENING OF 6"x6". IT SHALL BE SECURELY FASTENED TO THE STRUCTURE BUT REMOVEABLE FOR MAINTENANCE.
3. OUTLET PIPES SHALL HAVE AN ANTI-SEEP COLLAR OF CONCRETE LOCATED APPROXIMATELY UNDER THE MIDDLE OF THE DAM IN WHICH IT IS LOCATED. IT SHALL CONSIST OF CONCRETE POURED AROUND THE PIPE IN A VERTICAL DIRECTION. THE COLLAR SHALL BE A SQUARE 8" THICK AND SHALL EXTEND 18" BEYOND THE OUTSIDE OF THE PIPE IN EACH DIRECTION.
4. TREATMENT OUTLET PIPE SHALL NOT BE PVC BUT OTHER MATERIAL SUCH AS GSP WHICH IS NOT SUBJECT TO DETERIORATION IN SUNLIGHT.

**POND NOTES**

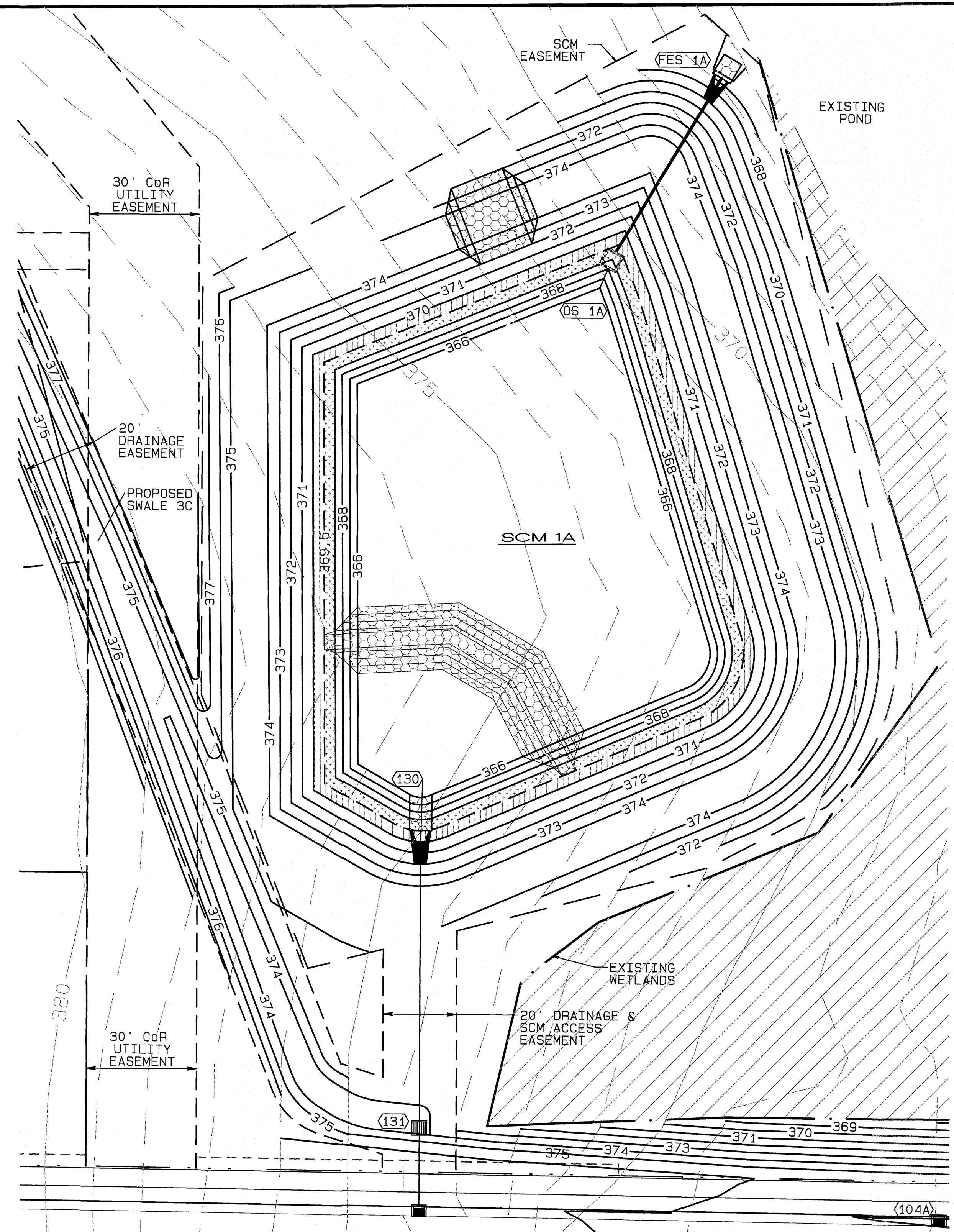
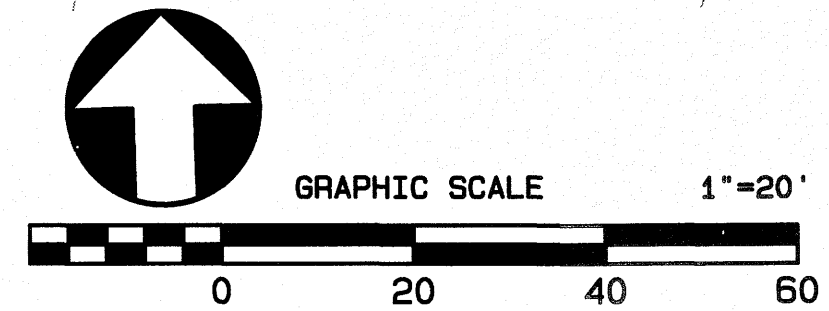
1. SEE SHEET 3.0 FOR BMP CONVERSION SEQUENCE.
2. FOREBAY DIVIDERS ARE TO BE INSTALLED WHILE CONVERTING FROM SEDIMENT BASIN TO WET POND.



**CROSS SECTION OS1A  
OUTLET STRUCTURE**  
N.T.S.



**PLAN VIEW OS1A  
PRIMARY OUTLET STRUCTURE**  
N.T.S.



NO.	DATE	REVISION	BY/APP.	DATE
1	11-20-20	UPDATED SCM LOCATION DUE TO REVISED WETLANDS. UPDATE ELEV'S	BAH/JRH	
2	06-14-21	REVISION	BAH/JRH	
3	06-14-21	FINAL SET	BAH/JRH	

**SCM 1A DETAILS**  
FOR  
**KALAS FALLS PHASE 1**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

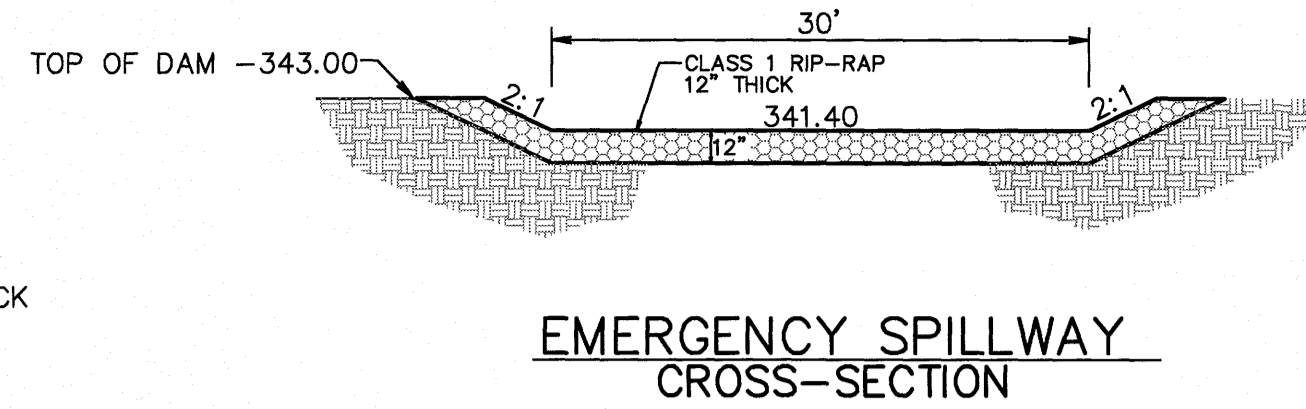
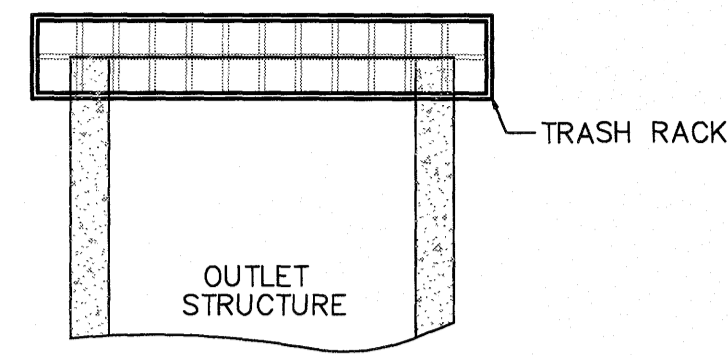
JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd. Ste. 450  
Raleigh, NC 27607 919-469-1101

6.15.21  
SEAL 9810  
SHEET NO.  
**4.7**



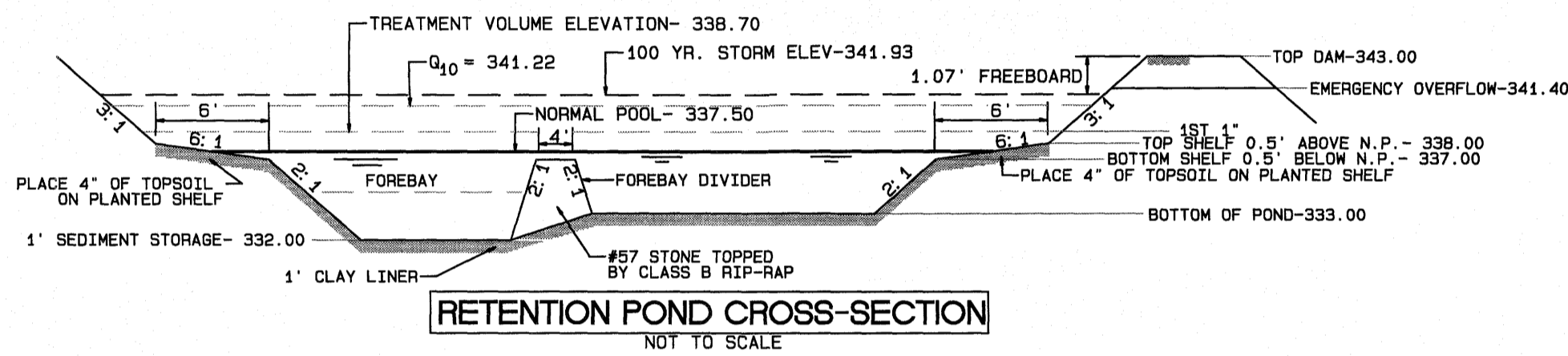
**TRASH RACK DETAIL**  
N.T.S.



**WET POND #2A**  
BOTTOM EL- 333.00  
NORMAL POOL- 337.50  
TOP OF DAM- 343.00

**TRASH RACK NOTES**

1. TRASH RACK SHALL BE 6" CLEAR OF STRUCTURE TOP AND SIDES. THE TRASH RACK NEED NOT COVER THE TREATMENT OUTLET PIPE.
2. IF STRUCTURE FEATURES ANY WEIR NOTCHES THE TRASH RACK WILL EXTEND 5" BELOW THE NOTCHES. (SEE CROSS-SECTION OF THE OUTLET STRUCTURE.)
3. TRASH RACK SHALL BE FASTENED TO EACH SIDE OF THE STRUCTURE AT AT LEAST 2 POINTS. IT SHALL BE EASILY REMOVED FOR MAINTENANCE OR ENTRY INTO THE STRUCTURE.
4. TRASH RACK SHALL ACCOMMODATE VALVE SHAFT THROUGH AN OPENING.
5. TRASH RACK SHALL BE MADE OF DURABLE MATERIAL WHICH WILL NOT RUST OR DETERIORATE IN SUNLIGHT.
6. MAX. OPENING IN TRASH RACK SHALL BE 5"x5" (MAX. 6"x6").
7. TOP OF TRASH RACK SHALL HAVE A GRID OF BARS (MAX. 6"x6").



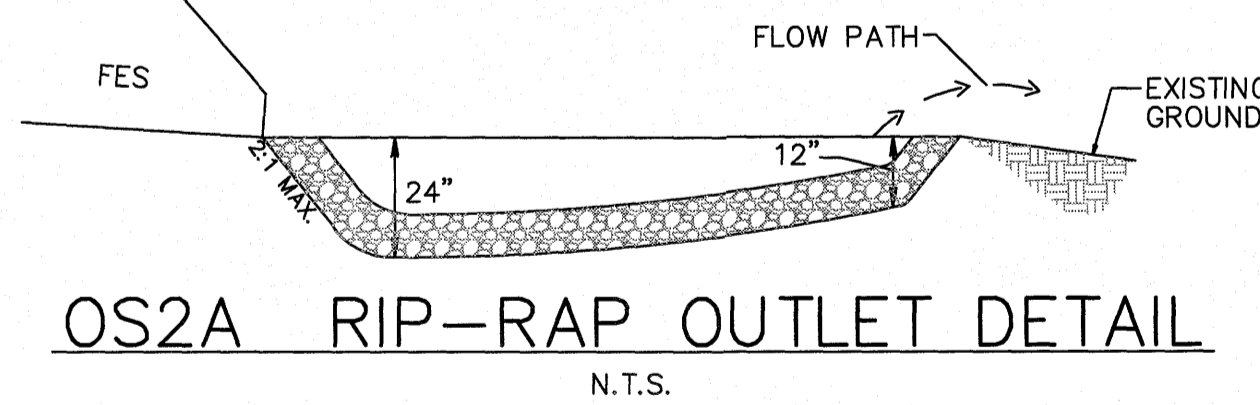
**PLANT LIST LITTORAL SHELF PLANT SCHEDULE:**

SHALLOW LAND (HERB.)		SHALLOW WATER (HERB.)	
EP	EUPATORIUM FISTRULOSUM	JOE PYE WEED	4-6" POT @ 3' SPACING
HC	HIBISCUS COCCINEA	SCARLET ROSE MALLOW	4-6" POT @ 3' SPACING
CG	CHELONE GLABRA	WHITE TURTLEHEAD	4-6" POT @ 3' SPACING
LC	LOBELIA CARDINALIS	CARDINAL FLOWER	4-6" POT @ 3' SPACING
JE	JUNCUS EFFUSES	SOFTRUSH	4-6" POT @ 3' SPACING
AS	ACORUS SPP	SWEET FLAG	4-6" POT @ 3' SPACING
IV	IRIS VERSICOLOR	BLUE FLAG IRIS	4-6" POT @ 3' SPACING
PC	PONTEDERIA CORDATA	PECKEREL WEED	4-6" POT @ 3' SPACING
PV	PELTANDRA VIRGINICA	ARROW ARUM	4-6" POT @ 3' SPACING

**LANDSCAPE PLAN:**

SHALLOW LAND= 1,784 sf (USE 446 PLANTS FROM LIST ABOVE)  
SHALLOW WATER= 1,718 sf (USE 430 PLANTS FROM LIST ABOVE)  
USE EQUAL NUMBER OF PLANTS FROM LIST ABOVE

CALCULATION: 50 PLANTS PER 200 SF

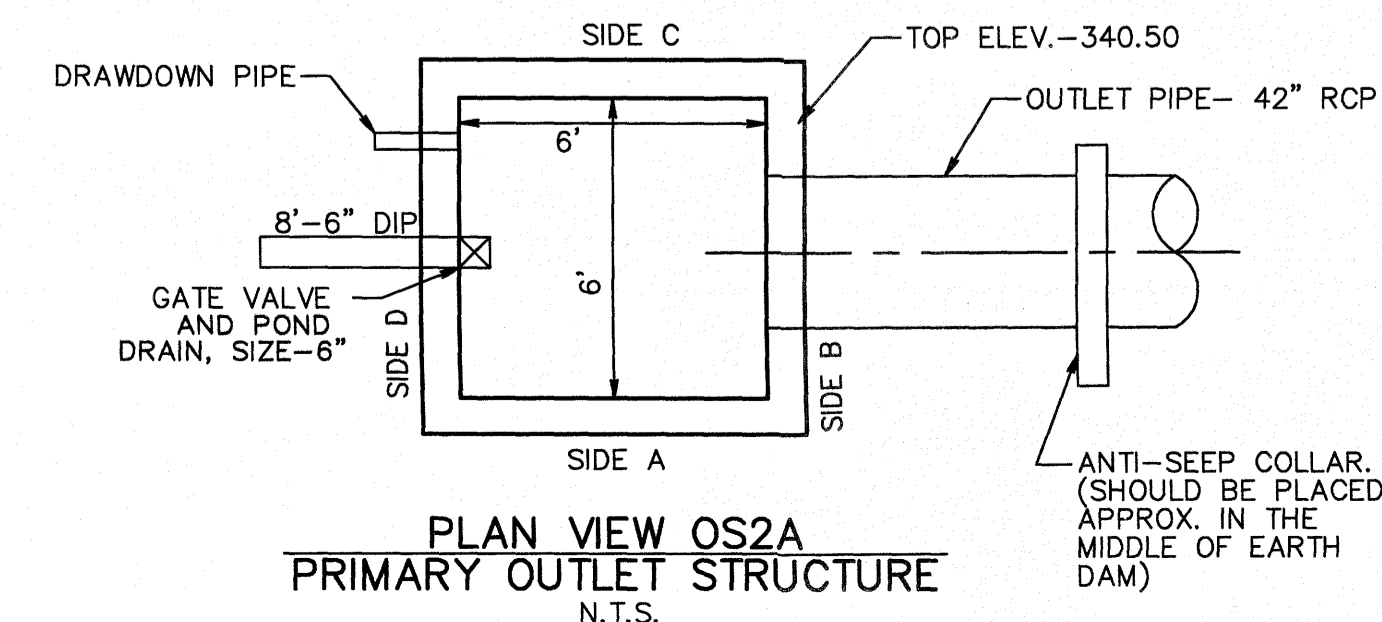
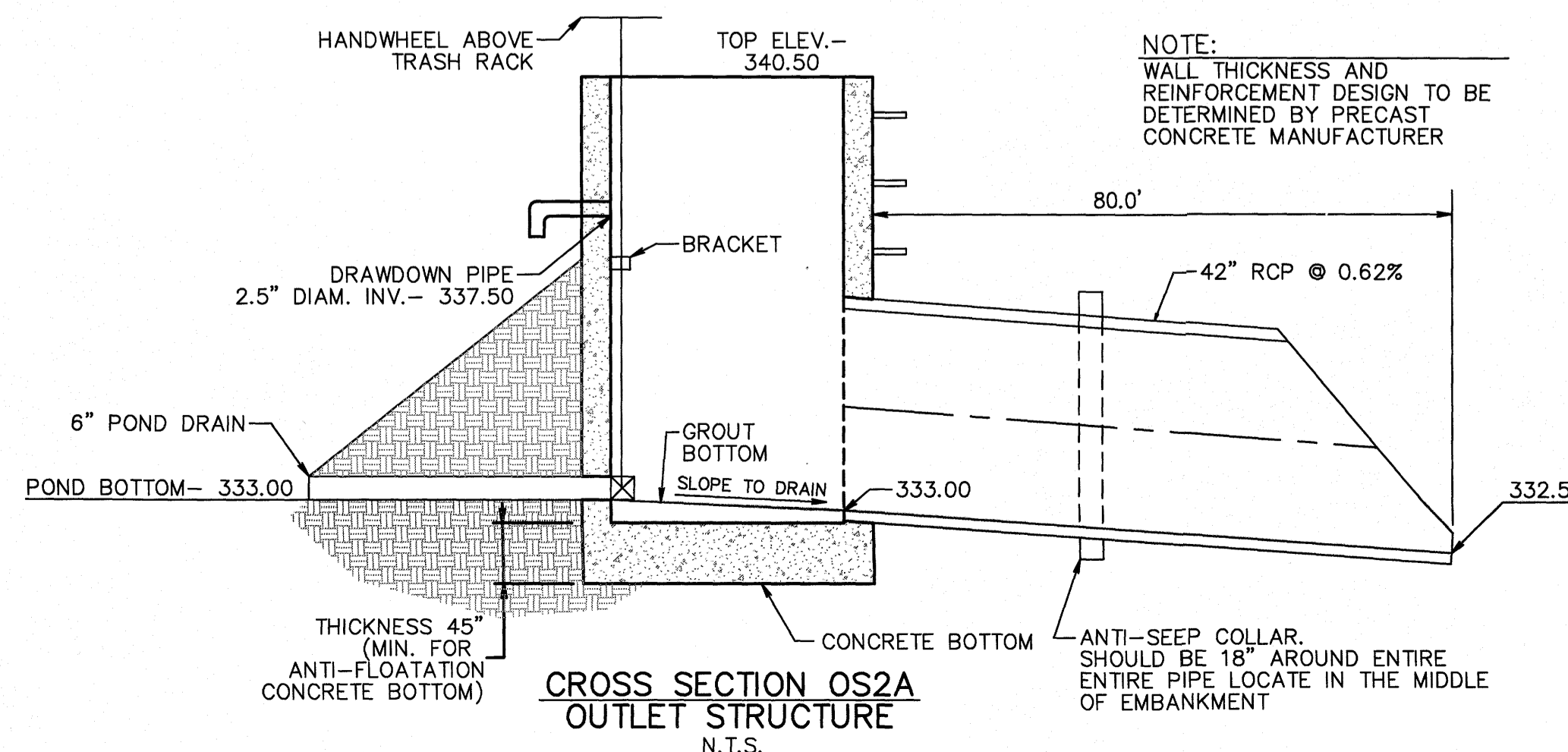
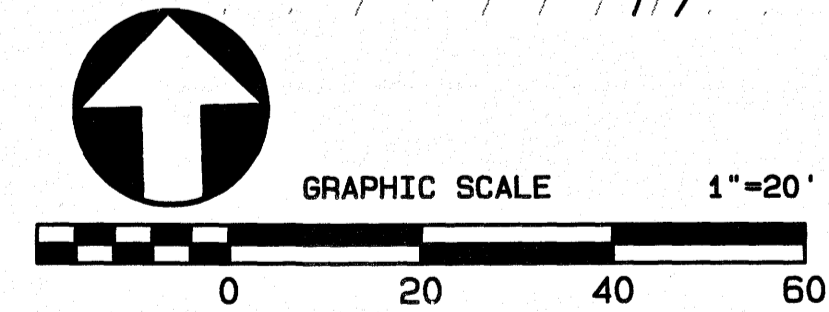
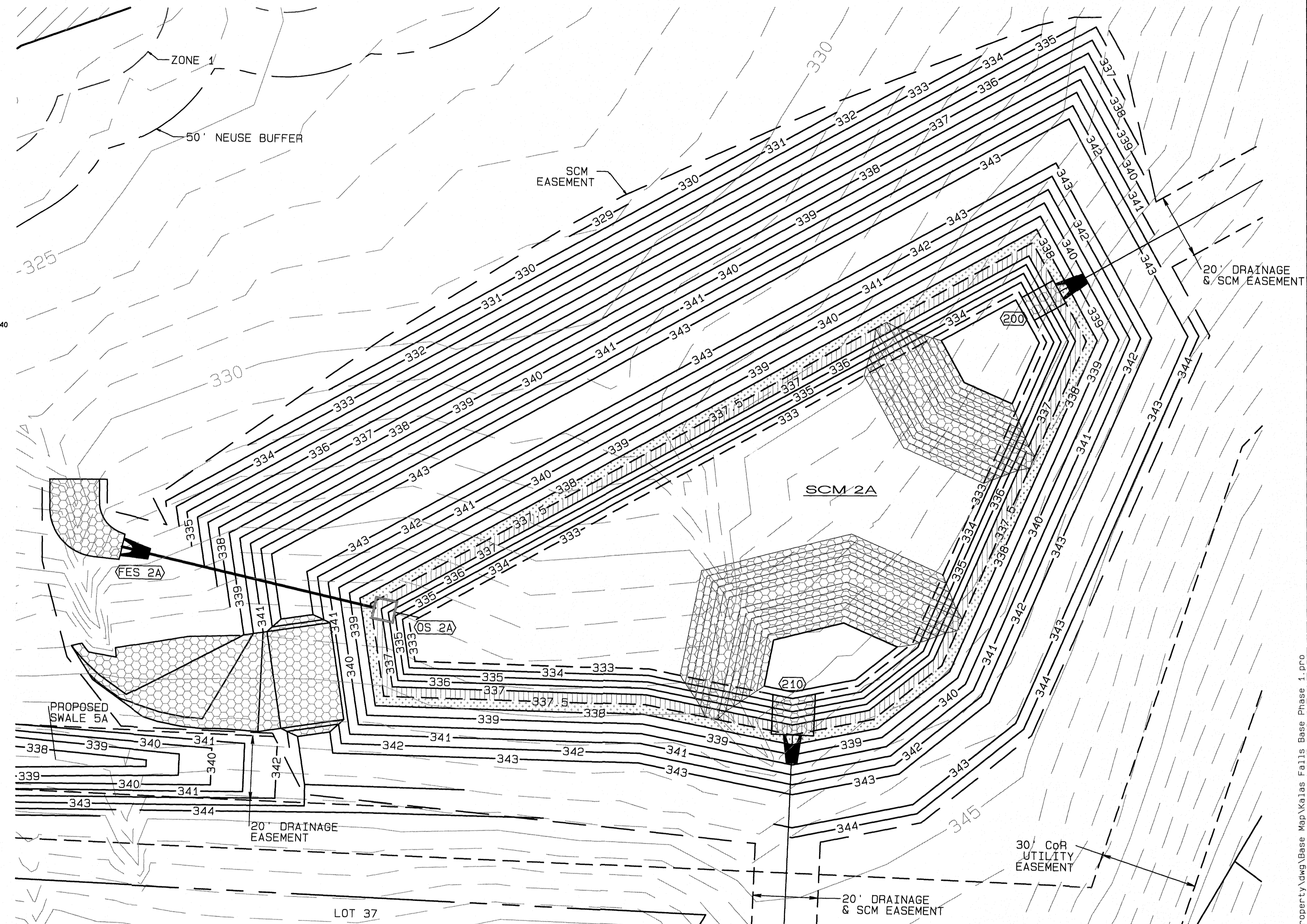


**OUTLET STRUCTURE GENERAL NOTES**

1. OUTLET STRUCTURE ELEVATIONS SHOWN ON THE DETAILS ON THIS SHEET ARE CRITICAL AND MUST BE WITHIN 0.02' OF THAT SHOWN. IF OUTLET STRUCTURES ARE PRE-CAST OFF-SITE, THE HOLE FOR THE OUTLET PIPE SHALL BE ENLARGED TO ALLOW UP TO 0.3' OF VERTICAL MOVEMENT. WHEN INSTALLED, THE EXCESS OPENING SHALL BE FILLED WITH GROUT.
2. THE OUTLET STRUCTURE SHALL HAVE A TRASH RACK COVERING THE OPENINGS. SUCH TRASH RACK SHALL BE 6" OUT FROM THE OPENING AND SHALL HAVE A MAXIMUM OPENING OF 6"x6". IT SHALL BE SECURELY FASTENED TO THE STRUCTURE BUT REMOVEABLE FOR MAINTENANCE.
3. OUTLET PIPES SHALL HAVE AN ANTI-SEEP COLLAR OF CONCRETE LOCATED APPROXIMATELY UNDER THE MIDDLE OF THE DAM IN WHICH IT IS LOCATED. IT SHALL CONSIST OF CONCRETE POURED AROUND THE PIPE IN A VERTICAL DIRECTION. THE COLLAR SHALL BE A SQUARE 8" THICK AND SHALL EXTEND 18" BEYOND THE OUTSIDE OF THE PIPE IN EACH DIRECTION.
4. TREATMENT OUTLET PIPE SHALL NOT BE PVC BUT OTHER MATERIAL SUCH AS GSP WHICH IS NOT SUBJECT TO DETERIORATION IN SUNLIGHT.

**POND NOTES**

1. SEE SHEET 3.0 FOR BMP CONVERSION SEQUENCE.
2. FOREBAY DIVIDERS ARE TO BE INSTALLED WHILE CONVERTING FROM SEDIMENT BASIN TO WET POND.
3. GROUNDWATER NOT ENCOUNTERED.



NO.	DATE	REVISION
1	11-20-20	UPDATED 100 YR. ELEVATION
2	05-10-21	PLAN REVISIONS PER CONSULTANT REVIEW
3	08-14-21	FINAL SET

**SCM 2A DETAILS**  
FOR  
**KALAS FALLS PHASE 1**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

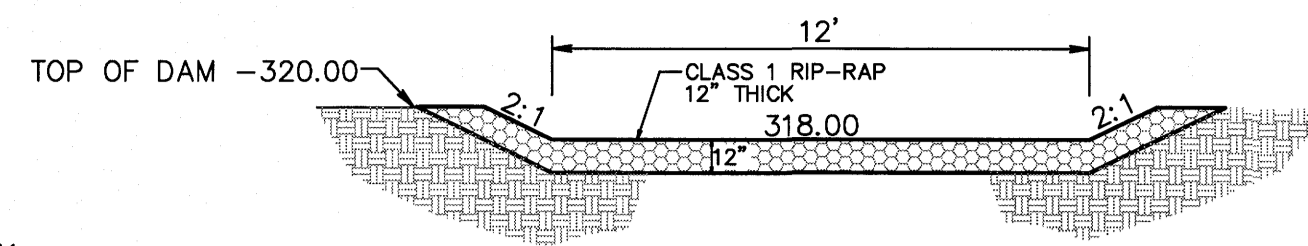
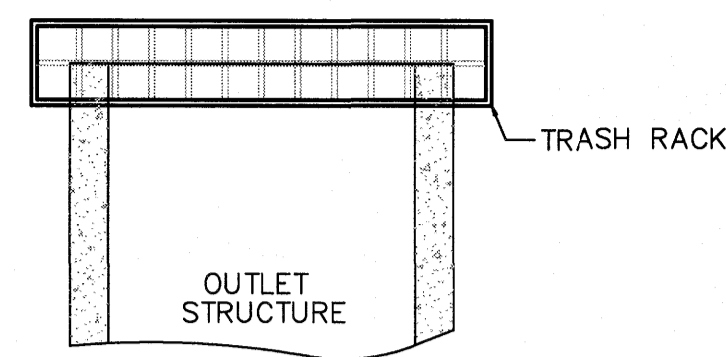
JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd. Ste. 450  
Raleigh, NC 27607 919-469-1101

Professional Engineer Seal  
6.15.21  
SHEET NO. **4.8**



**TRASH RACK DETAIL**  
N.T.S.



**EMERGENCY SPILLWAY CROSS-SECTION**

**WET POND #2B**  
BOTTOM EL- 310.00  
NORMAL POOL- 313.50  
TOP OF DAM- 320.00

**PLANT LIST LITTORAL SHELF PLANT SCHEDULE:**

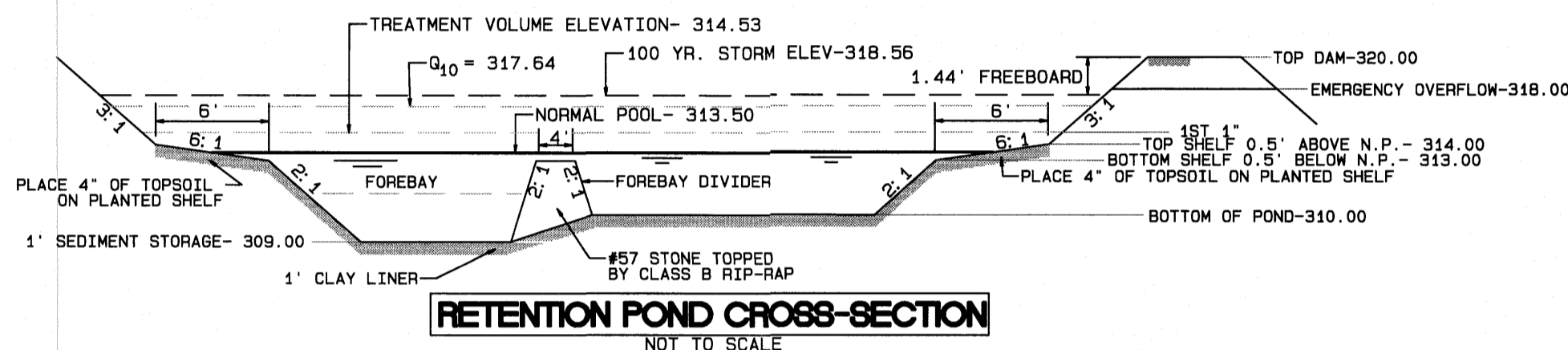
Code	Plant Name	Quantity	Spacing
EF	EUPATORIUM FISTRULOSUM	4-6"	POT @ 3' SPACING
HC	HIBISCUS COCCINEA	4-6"	POT @ 3' SPACING
C6	CHELONE GLABRA	4-6"	POT @ 3' SPACING
LC	LOBELIA CARDINALIS	4-6"	POT @ 3' SPACING
JOE	JOE PYE WEED	4-6"	POT @ 3' SPACING
SCAR	SCARLET ROSE MALLOW	4-6"	POT @ 3' SPACING
WHITE	WHITE TURTLEHEAD	4-6"	POT @ 3' SPACING
CARD	CARDINAL FLOWER	4-6"	POT @ 3' SPACING
JUNC	JUNCUS EFFUSES	4-6"	POT @ 3' SPACING
ACOR	ACORUS SPP	4-6"	POT @ 3' SPACING
IRIS	IRIS VERSICOLOR	4-6"	POT @ 3' SPACING
PECK	PECKEREL WEED	4-6"	POT @ 3' SPACING
ARROW	ARROW ARUM	4-6"	POT @ 3' SPACING
SOFT	SOFTRUSH	4-6"	POT @ 3' SPACING
SWEET	SWEET FLAG	4-6"	POT @ 3' SPACING
BLUE	BLUE FLAG IRIS	4-6"	POT @ 3' SPACING

**LANDSCAPE PLAN:**  
SHALLOW LAND= 1,731 sf (USE 433 PLANTS FROM LIST ABOVE)  
SHALLOW WATER= 1,663 sf (USE 416 PLANTS FROM LIST ABOVE)  
USE EQUAL NUMBER OF PLANTS FROM LIST ABOVE

CALCULATION: 50 PLANTS PER 200 SF

**TRASH RACK NOTES**

1. TRASH RACK SHALL BE 6" CLEAR OF STRUCTURE TOP AND SIDES. THE TRASH RACK NEED NOT COVER THE TREATMENT OUTLET PIPE.
2. IF STRUCTURE FEATURES ANY WEIR NOTCHES THE TRASH RACK WILL EXTEND 5" BELOW THE NOTCHES. (SEE CROSS-SECTION OF THE OUTLET STRUCTURE.)
3. TRASH RACK SHALL BE FASTENED TO EACH SIDE OF THE STRUCTURE AT AT LEAST 2 POINTS. IT SHALL BE EASILY REMOVED FOR MAINTENANCE OR ENTRY INTO THE STRUCTURE.
4. TRASH RACK SHALL ACCOMMODATE VALVE SHAFT THROUGH AN OPENING.
5. TRASH RACK SHALL BE MADE OF DURABLE MATERIAL WHICH WILL NOT RUST OR DETERIORATE IN SUNLIGHT.
6. MAX. OPENING IN TRASH RACK SHALL BE 6"x6".
7. TOP OF TRASH RACK SHALL HAVE A GRID OF BARS (MAX. 5"x5").



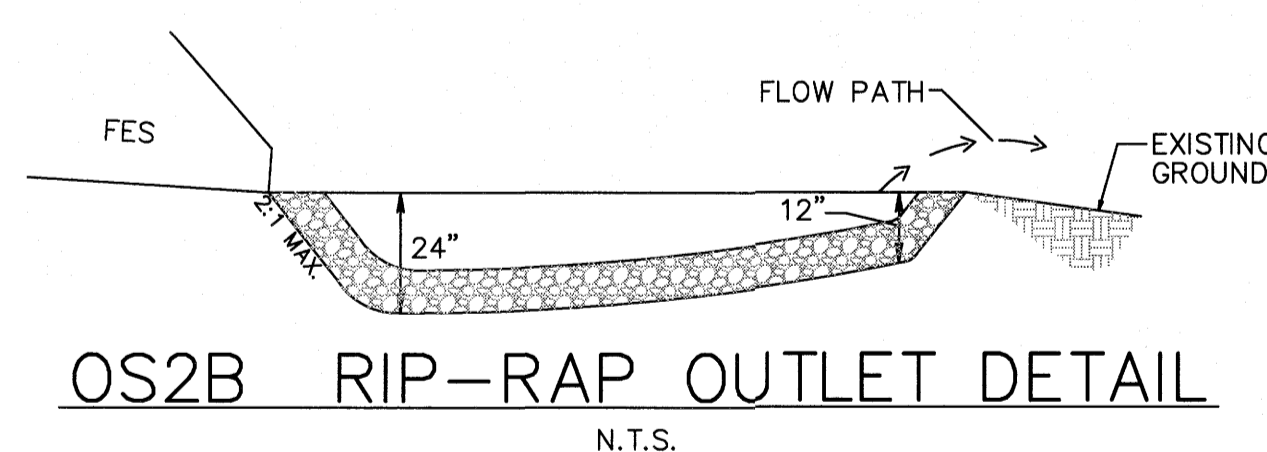
**RETENTION POND CROSS-SECTION**  
NOT TO SCALE

**OUTLET STRUCTURE GENERAL NOTES**

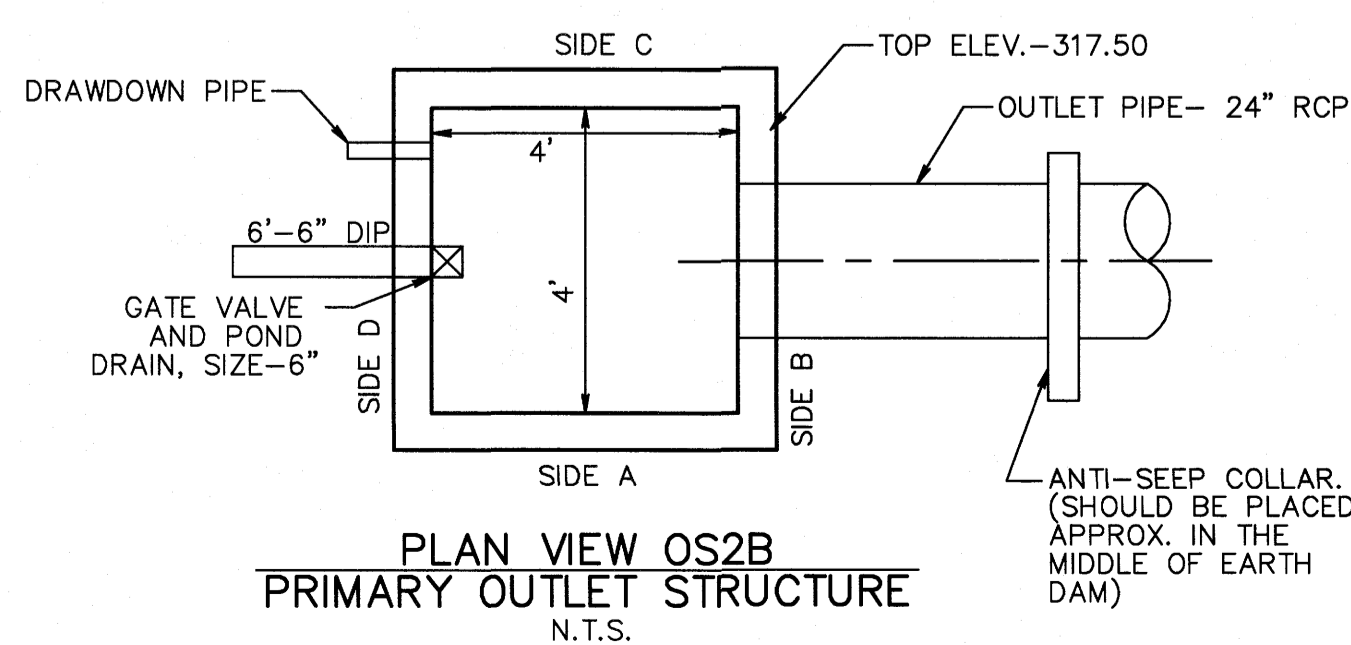
1. OUTLET STRUCTURE ELEVATIONS SHOWN ON THE DETAILS ON THIS SHEET ARE CRITICAL AND MUST BE WITHIN 0.02' OF THAT SHOWN. IF OUTLET STRUCTURES ARE PRE-CAST OFF-SITE, THE HOLE FOR THE OUTLET PIPE SHALL BE ENLARGED TO ALLOW UP TO 0.3' OF VERTICAL MOVEMENT. WHEN INSTALLED, THE EXCESS OPENING SHALL BE FILLED WITH GROUT.
2. THE OUTLET STRUCTURE SHALL HAVE A TRASH RACK COVERING THE OPENINGS. SUCH TRASH RACK SHALL BE 6" OUT FROM THE OPENING AND SHALL HAVE A MAXIMUM OPENING OF 6"x6". IT SHALL BE SECURELY FASTENED TO THE STRUCTURE BUT REMOVEABLE FOR MAINTENANCE.
3. OUTLET PIPES SHALL HAVE AN ANTI-SEEP COLLAR OF CONCRETE LOCATED APPROXIMATELY UNDER THE MIDDLE OF THE DAM IN WHICH IT IS LOCATED. IT SHALL CONSIST OF CONCRETE POURED AROUND THE PIPE IN A VERTICAL DIRECTION. THE COLLAR SHALL BE A SQUARE 8" THICK AND SHALL EXTEND 18" BEYOND THE OUTSIDE OF THE PIPE IN EACH DIRECTION.
4. TREATMENT OUTLET PIPE SHALL NOT BE PVC BUT OTHER MATERIAL SUCH AS GSP WHICH IS NOT SUBJECT TO DETERIORATION IN SUNLIGHT.

**POND NOTES**

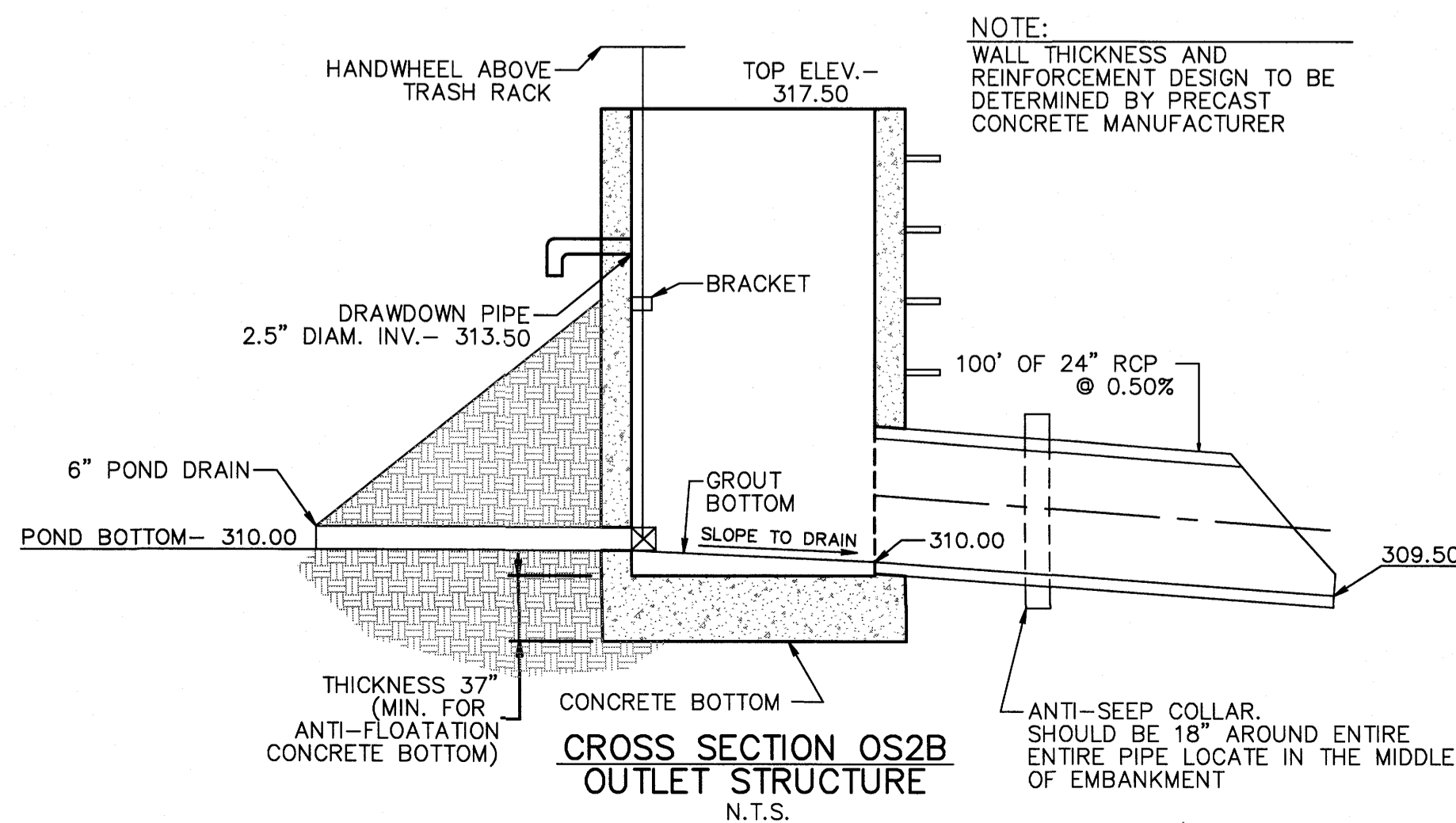
1. SEE SHEET 3.0 FOR BMP CONVERSION SEQUENCE.
2. FOREBAY DIVIDERS ARE TO BE INSTALLED WHILE CONVERTING FROM SEDIMENT BASIN TO WET POND.



**OS2B RIP-RAP OUTLET DETAIL**  
N.T.S.



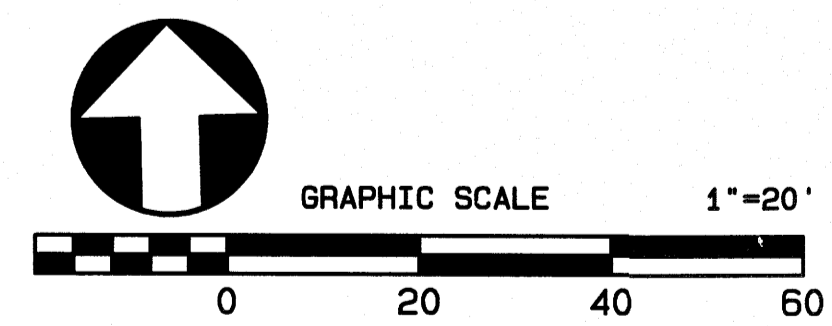
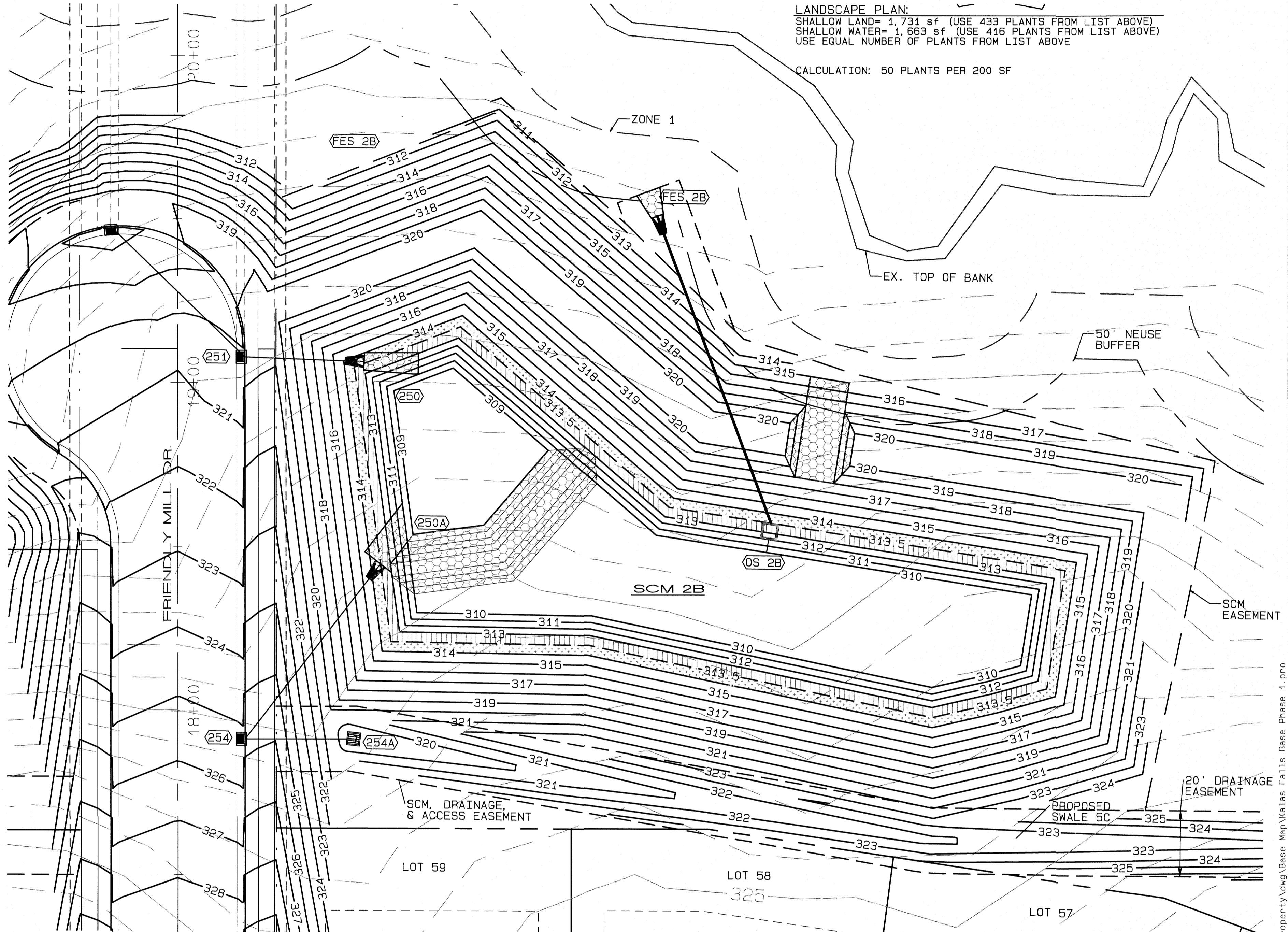
**PLAN VIEW OS2B PRIMARY OUTLET STRUCTURE**  
N.T.S.



**CROSS SECTION OS2B OUTLET STRUCTURE**  
N.T.S.

NOTE:  
WALL THICKNESS AND REINFORCEMENT DESIGN TO BE DETERMINED BY PRECAST CONCRETE MANUFACTURER

NOTE:  
ANTI-SEEP COLLAR SHOULD BE 18" AROUND ENTIRE ENTIRE PIPE LOCATE IN THE MIDDLE OF EMBANKMENT



FILE: Z:\Jobs\9900\Wet\ins Property\dwg\Base Map\Kalas Falls Base Phase 1.prn

No.	DATE	REVISION
1	11-20-20	UPDATED PLAN PER TOR COMMENTS
2	07-18-21	REVISIONS PER TOR CONSULTANT REVIEW
3	07-18-21	FINAL SET

**SCM 2B DETAILS**  
FOR  
**KALAS FALLS PHASE 1**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

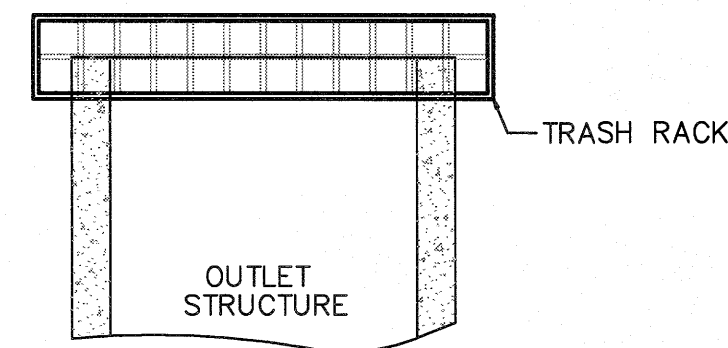
JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd. Ste. 450  
Raleigh, NC 27607 919-469-1101

7-15-21  
SEAL 9810  
SHEET NO.  
**4.9**

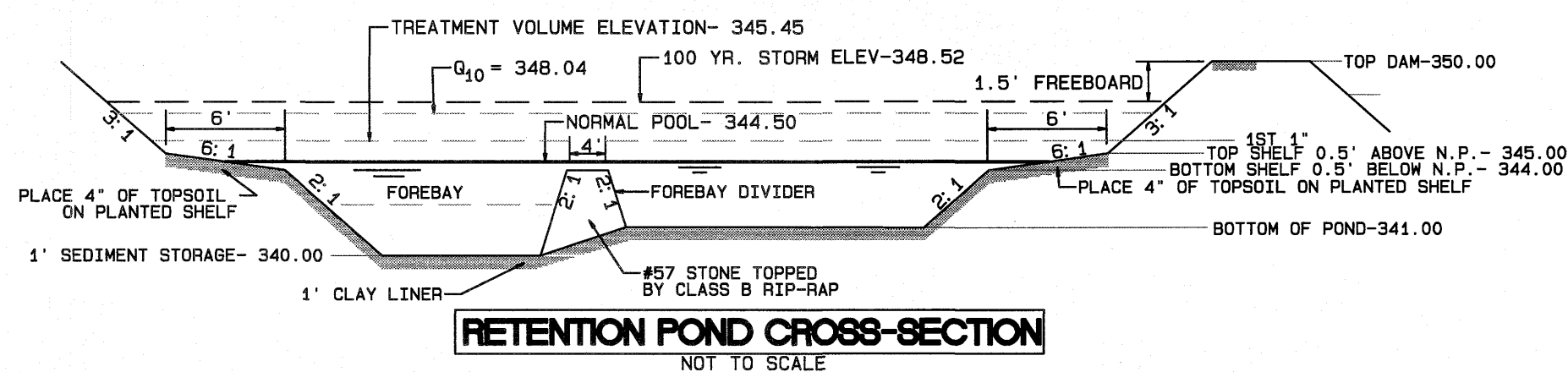


**TRASH RACK DETAIL**  
N.T.S.



**TRASH RACK NOTES**

1. TRASH RACK SHALL BE 6" CLEAR OF STRUCTURE TOP AND SIDES. THE TRASH RACK NEED NOT COVER THE TREATMENT OUTLET PIPE.
2. IF STRUCTURE FEATURES ANY WEIR NOTCHES THE TRASH RACK WILL EXTEND 5" BELOW THE NOTCHES. (SEE CROSS-SECTION OF THE OUTLET STRUCTURE.)
3. TRASH RACK SHALL BE FASTENED TO EACH SIDE OF THE STRUCTURE AT AT LEAST 2 POINTS. IT SHALL BE EASILY REMOVED FOR MAINTENANCE OR ENTRY INTO THE STRUCTURE.
4. TRASH RACK SHALL ACCOMMODATE VALVE SHAFT THROUGH AN OPENING.
5. TRASH RACK SHALL BE MADE OF DURABLE MATERIAL WHICH WILL NOT RUST OR DETERIORATE IN SUNLIGHT.
6. MAX. OPENING IN TRASH RACK SHALL BE 5"x5".
7. TOP OF TRASH RACK SHALL HAVE A GRID OF BARS (MAX. 6"x6").



**RETENTION POND CROSS-SECTION**  
NOT TO SCALE

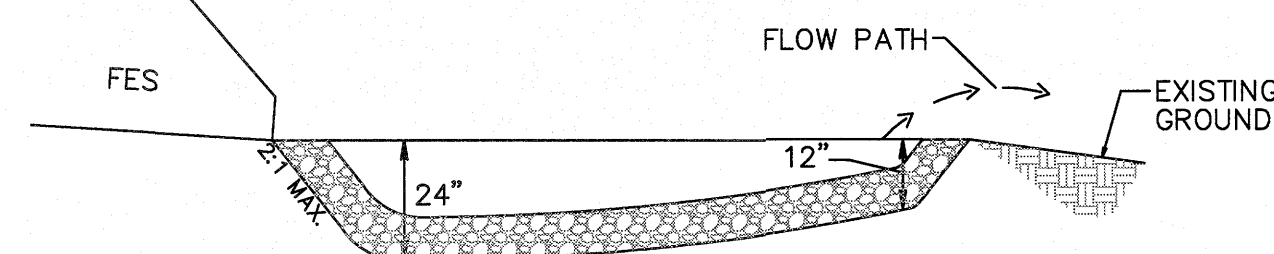
**PLANT LIST LITTORAL SHELF PLANT SCHEDULE:**

SHALLOW LAND (HERB.)			
EF	EUPATORIUM FISTRULOSUM	JOE PYE WEED	4-6" POT @ 3' SPACING
HC	HIBICUS COCCINEA	SCARLET ROSE MALLOW	4-6" POT @ 3' SPACING
CG	CHELONE GLABRA	WHITE TURTLEHEAD	4-6" POT @ 3' SPACING
LC	LOBELIA CARDINALIS	CARDINAL FLOWER	4-6" POT @ 3' SPACING
SHALLOW WATER (HERB.)			
JE	JUNCUS EFFUSES	SOFTRUSH	4-6" POT @ 3' SPACING
AS	ACORUS SPP	SWEET FLAG	4-6" POT @ 3' SPACING
IV	IRIS VERSICOLOR	BLUE FLAG IRIS	4-6" POT @ 3' SPACING
PC	PONTEDERIA CORDATA	PECKEREL WEED	4-6" POT @ 3' SPACING
PV	PELTANDRA VIRGINICA	ARROW ARUM	4-6" POT @ 3' SPACING

**LANDSCAPE PLAN:**

SHALLOW LAND= 1,486 sf (USE 372 PLANTS FROM LIST ABOVE)  
SHALLOW WATER= 1,409 sf (USE 352 PLANTS FROM LIST ABOVE)  
USE EQUAL NUMBER OF PLANTS FROM LIST ABOVE

CALCULATION: 50 PLANTS PER 200 SF



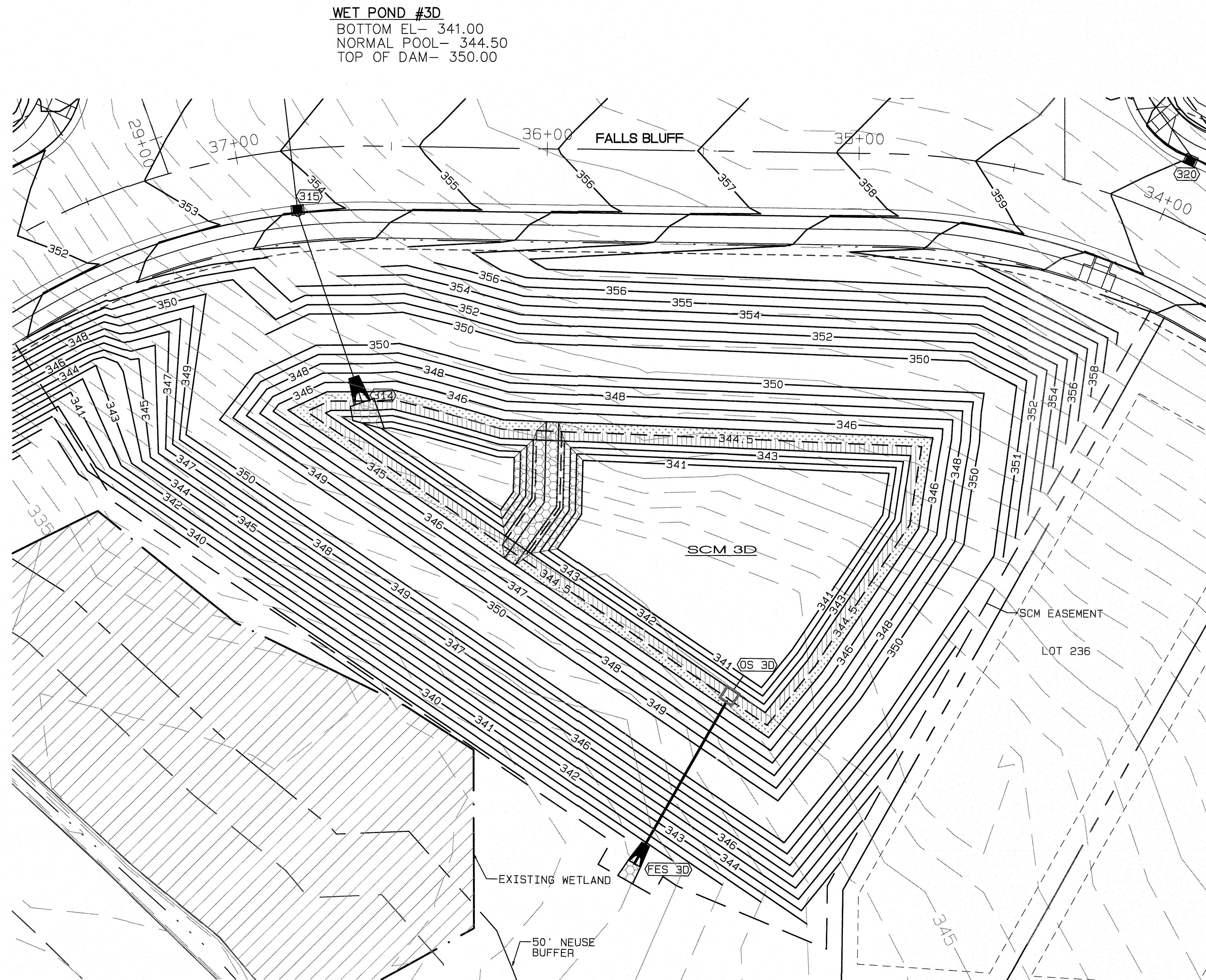
**OS3D RIP-RAP OUTLET DETAIL**  
N.T.S.

**OUTLET STRUCTURE GENERAL NOTES**

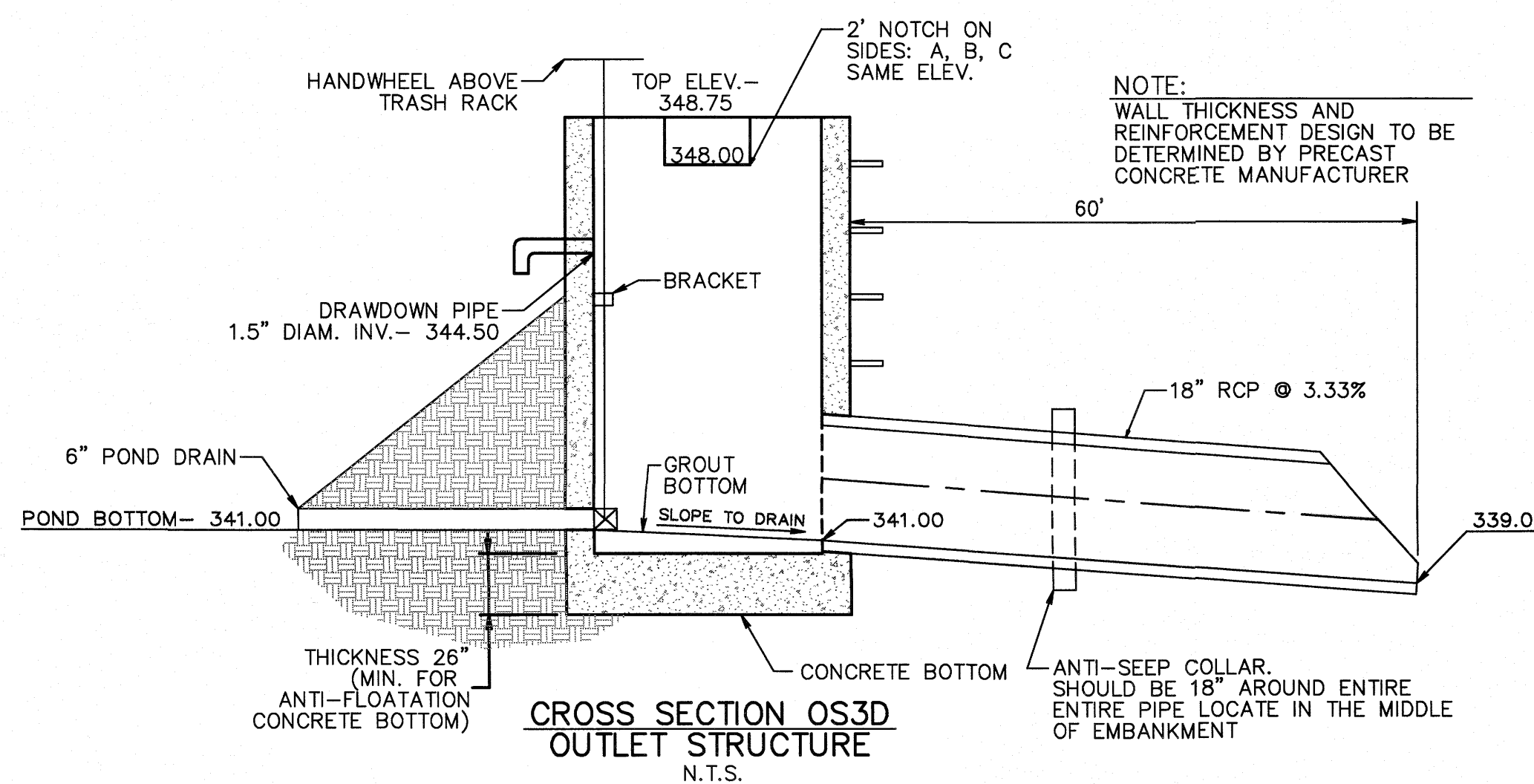
1. OUTLET STRUCTURE ELEVATIONS SHOWN ON THE DETAILS ON THIS SHEET ARE CRITICAL AND MUST BE WITHIN 0.02' OF THAT SHOWN. IF OUTLET STRUCTURES ARE PRE-CAST OFF-SITE, THE HOLE FOR THE OUTLET PIPE SHALL BE ENLARGED TO ALLOW UP TO 0.3' OF VERTICAL MOVEMENT. WHEN INSTALLED, THE EXCESS OPENING SHALL BE FILLED WITH GROUT.
2. THE OUTLET STRUCTURE SHALL HAVE A TRASH RACK COVERING THE OPENINGS. SUCH TRASH RACK SHALL BE 6" OUT FROM THE OPENING AND SHALL HAVE A MAXIMUM OPENING OF 6"x6". IT SHALL BE SECURELY FASTENED TO THE STRUCTURE BUT REMOVEABLE FOR MAINTENANCE.
3. OUTLET PIPES SHALL HAVE AN ANTI-SEEP COLLAR OF CONCRETE LOCATED APPROXIMATELY UNDER THE MIDDLE OF THE DAM IN WHICH IT IS LOCATED. IT SHALL CONSIST OF CONCRETE POURED AROUND THE PIPE IN A VERTICAL DIRECTION. THE COLLAR SHALL BE A SQUARE 8" THICK AND SHALL EXTEND 18" BEYOND THE OUTSIDE OF THE PIPE IN EACH DIRECTION.
4. TREATMENT OUTLET PIPE SHALL NOT BE PVC BUT OTHER MATERIAL SUCH AS GSP WHICH IS NOT SUBJECT TO DETERIORATION IN SUNLIGHT.

**POND NOTES**

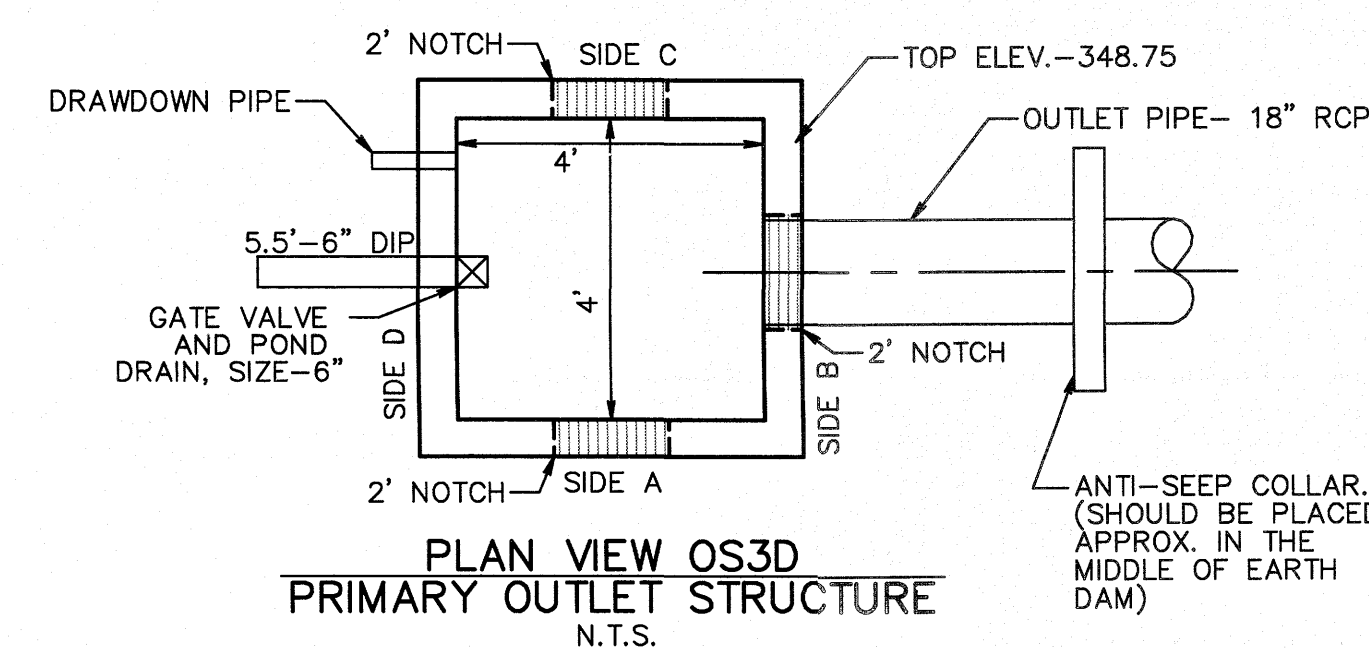
1. SEE SHEET 3.0 FOR BMP CONVERSION SEQUENCE.
2. FOREBAY DIVIDERS ARE TO BE INSTALLED WHILE CONVERTING FROM SEDIMENT BASIN TO WET POND.



**WET POND #3D**  
BOTTOM EL- 341.00  
NORMAL POOL- 344.50  
TOP OF DAM- 350.00



**CROSS SECTION OS3D OUTLET STRUCTURE**  
N.T.S.



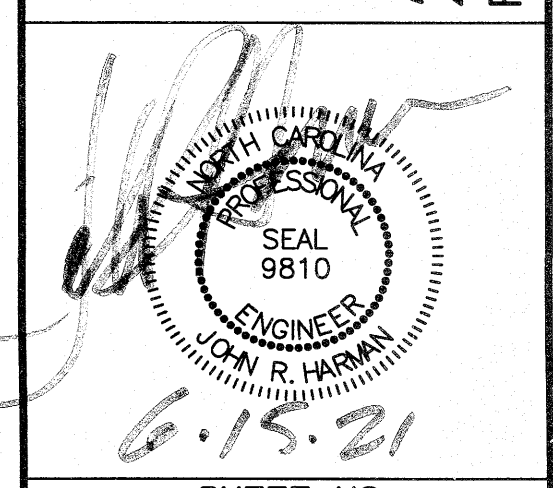
**PLAN VIEW OS3D PRIMARY OUTLET STRUCTURE**  
N.T.S.

NO.	DATE	REVISION
1	11-20-20	UPDATED TREATMENT ELEVATION
2	05-10-21	PLAN REVISIONS PER JOB CONSULTANT REVIEW
3	06-14-21	FINAL SET

**SCM 3D DETAILS**  
FOR  
**KALAS FALLS PHASE 1**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

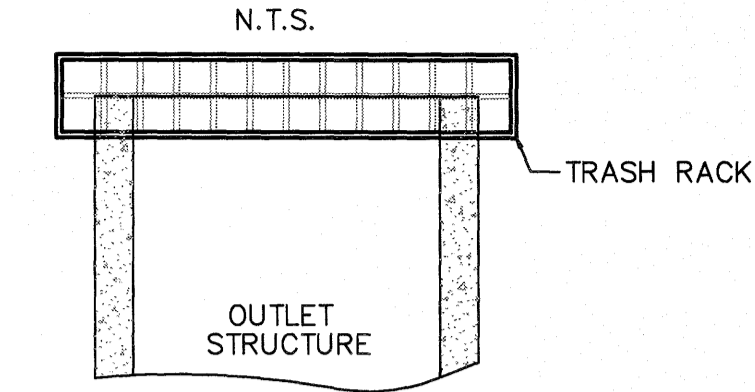
**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd. Ste. 450  
Raleigh, NC 27607 919-469-1101



SHEET NO.  
**4.10**



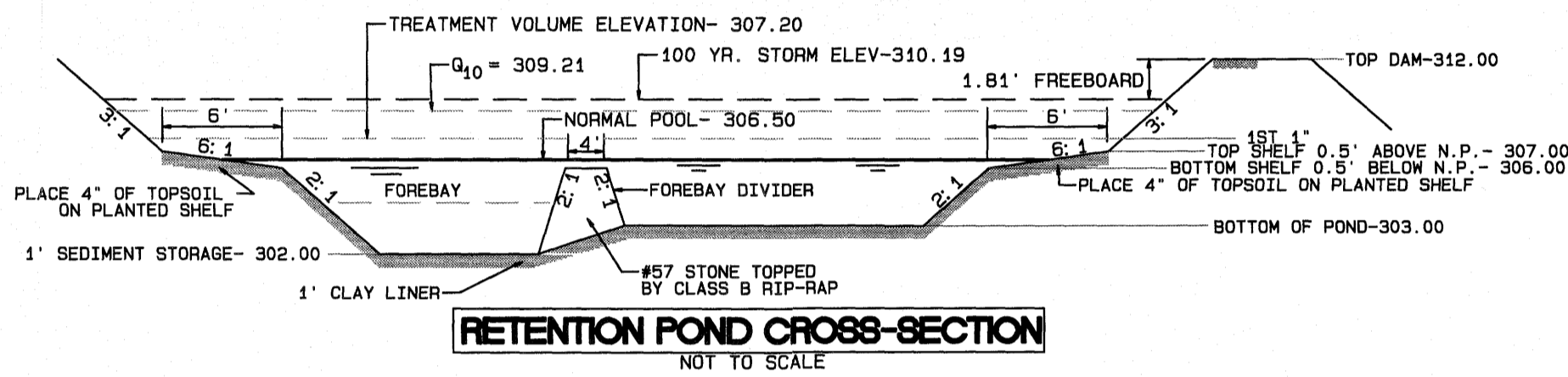
**TRASH RACK DETAIL**



**TRASH RACK NOTES**

1. TRASH RACK SHALL BE 6" CLEAR OF STRUCTURE TOP AND SIDES. THE TRASH RACK NEED NOT COVER THE TREATMENT OUTLET PIPE.
2. IF STRUCTURE FEATURES ANY WEIR NOTCHES THE TRASH RACK WILL EXTEND 5" BELOW THE NOTCHES. (SEE CROSS-SECTION OF THE OUTLET STRUCTURE.)
3. TRASH RACK SHALL BE FASTENED TO EACH SIDE OF THE STRUCTURE AT AT LEAST 2 POINTS. IT SHALL BE EASILY REMOVED FOR MAINTENANCE OR ENTRY INTO THE STRUCTURE.
4. TRASH RACK SHALL ACCOMMODATE VALVE SHAFT THROUGH AN OPENING.
5. TRASH RACK SHALL BE MADE OF DURABLE MATERIAL WHICH WILL NOT RUST OR DETERIORATE IN SUNLIGHT.
6. MAX. OPENING IN TRASH RACK SHALL BE 6"x6".
7. TOP OF TRASH RACK SHALL HAVE A GRID OF BARS (MAX. 5"x5").

**WET POND #3E**  
 BOTTOM EL- 303.00  
 NORMAL POOL- 306.50  
 TOP OF DAM- 312.00

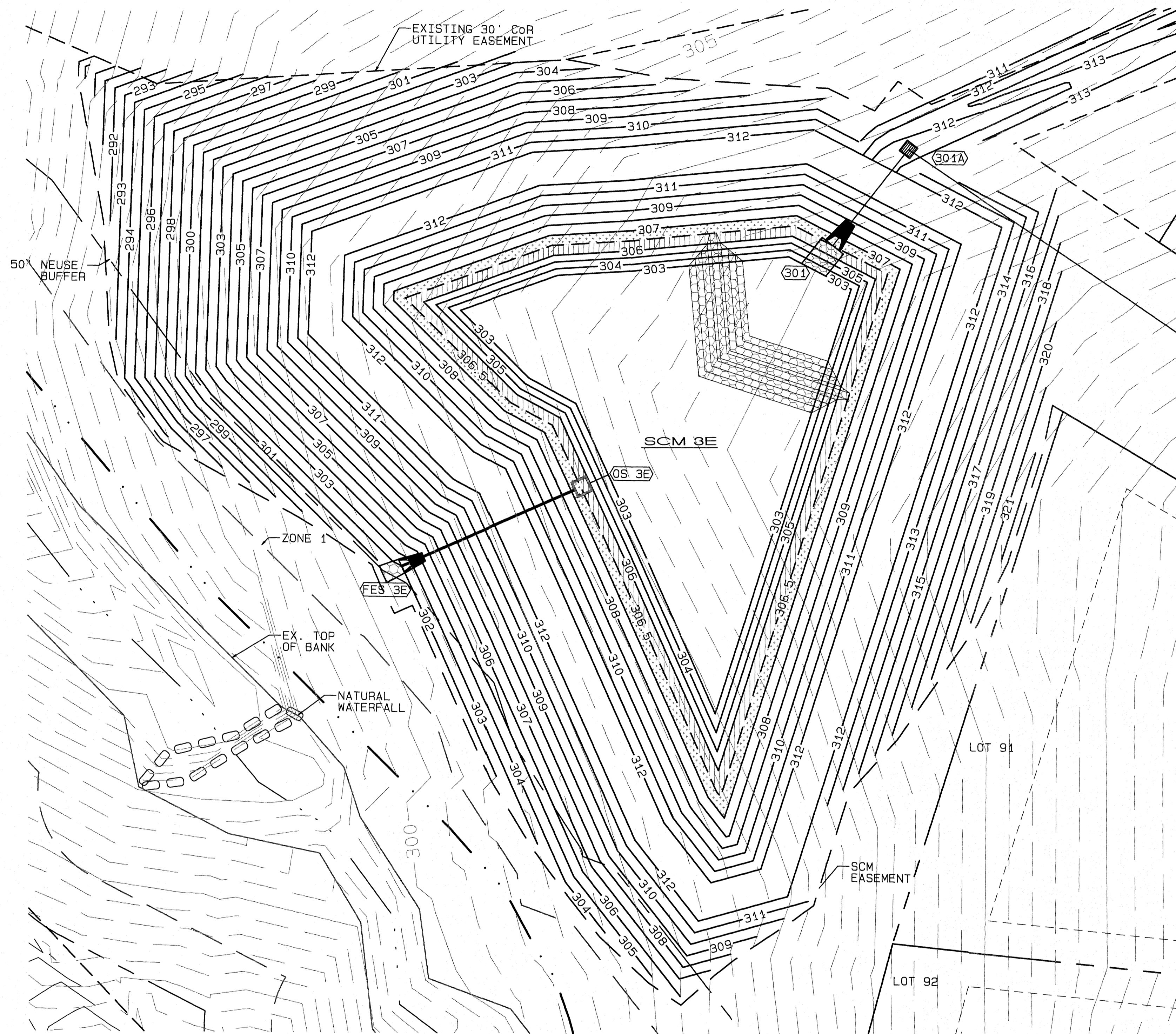
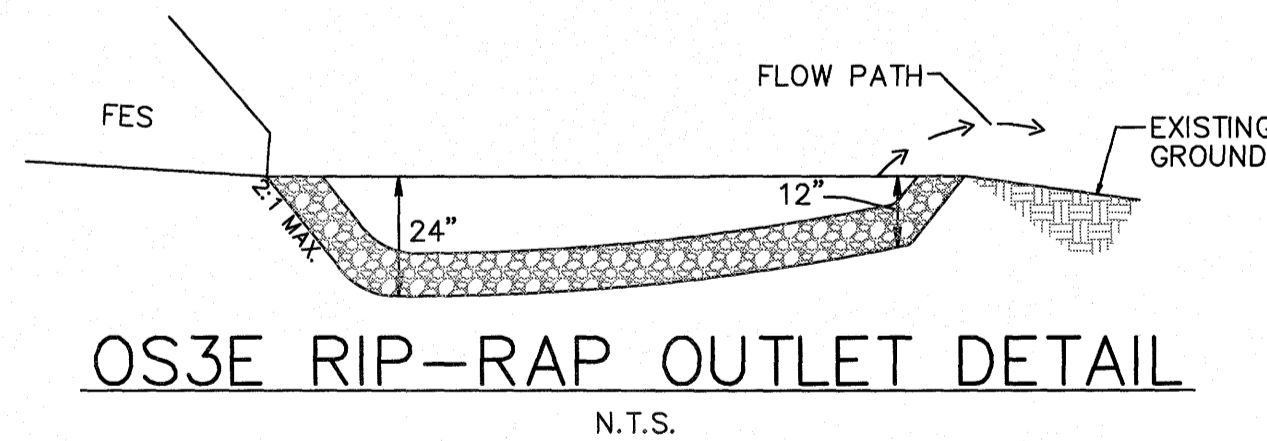


**PLANT LIST LITTORAL SHELF PLANT SCHEDULE:**

SHALLOW LAND (HERB.)	PLANT	HEIGHT	POT	SPACING
EF	EUPATORIUM FISTRULOSUM	4-6"	POT @ 3'	SPACING
HC	HIBICUS COCCINEA	4-6"	POT @ 3'	SPACING
CG	CHELONE GLABRA	4-6"	POT @ 3'	SPACING
LC	LOBELIA CARDINALIS	4-6"	POT @ 3'	SPACING
	JOE PYE WEED	4-6"	POT @ 3'	SPACING
	SCARLET ROSE MALLOW	4-6"	POT @ 3'	SPACING
	WHITE TURTLEHEAD	4-6"	POT @ 3'	SPACING
	CARDINAL FLOWER	4-6"	POT @ 3'	SPACING
SHALLOW WATER (HERB.)	PLANT	HEIGHT	POT	SPACING
JE	JUNCUS EFFUSES	4-6"	POT @ 3'	SPACING
AS	ACORUS SPP	4-6"	POT @ 3'	SPACING
IV	IRIS VERSICOLOR	4-6"	POT @ 3'	SPACING
PC	PONTEDERIA CORDATA	4-6"	POT @ 3'	SPACING
PV	PELTANDRA VIRGINICA	4-6"	POT @ 3'	SPACING
	SOFTTRUSH	4-6"	POT @ 3'	SPACING
	SWEET FLAG	4-6"	POT @ 3'	SPACING
	BLUE FLAG IRIS	4-6"	POT @ 3'	SPACING
	PECKEREL WEED	4-6"	POT @ 3'	SPACING
	ARROW ARUM	4-6"	POT @ 3'	SPACING

**LANDSCAPE PLAN:**  
 SHALLOW LAND= 1,241 sf (USE 310 PLANTS FROM LIST ABOVE)  
 SHALLOW WATER= 1,170 sf (USE 292 PLANTS FROM LIST ABOVE)  
 USE EQUAL NUMBER OF PLANTS FROM LIST ABOVE

CALCULATION: 50 PLANTS PER 200 SF

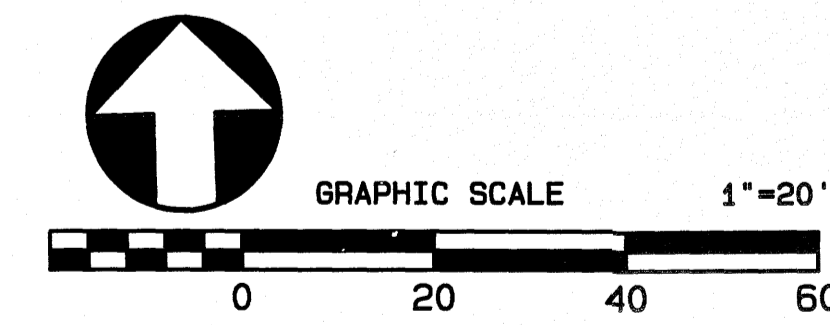
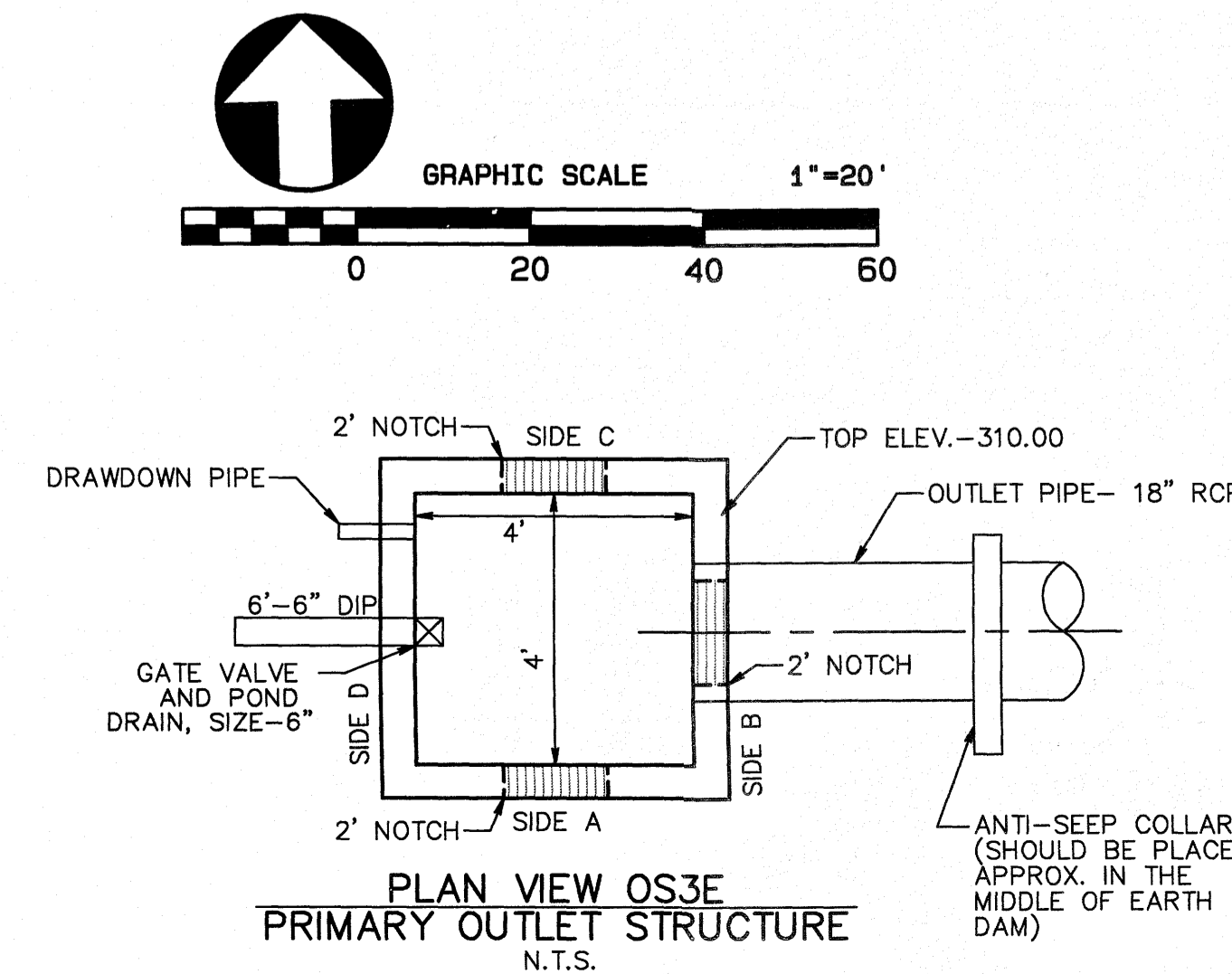
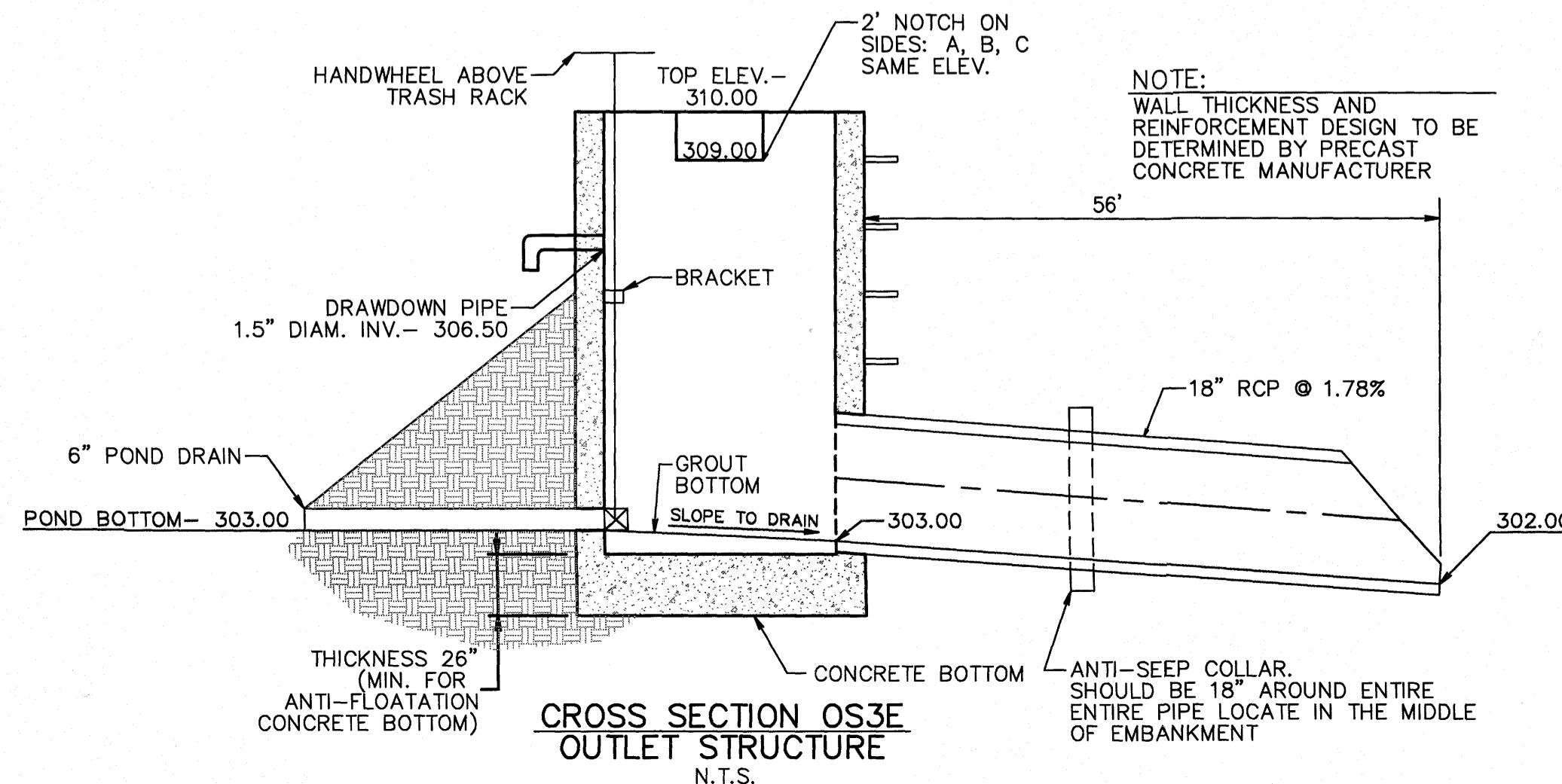


**OUTLET STRUCTURE GENERAL NOTES**

1. OUTLET STRUCTURE ELEVATIONS SHOWN ON THE DETAILS ON THIS SHEET ARE CRITICAL AND MUST BE WITHIN 0.02' OF THAT SHOWN. IF OUTLET STRUCTURES ARE PRE-CAST OFF-SITE, THE HOLE FOR THE OUTLET PIPE SHALL BE ENLARGED TO ALLOW UP TO 0.3' OF VERTICAL MOVEMENT. WHEN INSTALLED, THE EXCESS OPENING SHALL BE FILLED WITH GROUT.
2. THE OUTLET STRUCTURE SHALL HAVE A TRASH RACK COVERING THE OPENINGS. SUCH TRASH RACK SHALL BE 6" OUT FROM THE OPENING AND SHALL HAVE A MAXIMUM OPENING OF 6"x6". IT SHALL BE SECURELY FASTENED TO THE STRUCTURE BUT REMOVABLE FOR MAINTENANCE.
3. OUTLET PIPES SHALL HAVE AN ANTI-SEEP COLLAR OF CONCRETE LOCATED APPROXIMATELY UNDER THE MIDDLE OF THE DAM IN WHICH IT IS LOCATED. IT SHALL CONSIST OF CONCRETE POURED AROUND THE PIPE IN A VERTICAL DIRECTION. THE COLLAR SHALL BE A SQUARE 8" THICK AND SHALL EXTEND 18" BEYOND THE OUTSIDE OF THE PIPE IN EACH DIRECTION.
4. TREATMENT OUTLET PIPE SHALL NOT BE PVC BUT OTHER MATERIAL SUCH AS GSP WHICH IS NOT SUBJECT TO DETERIORATION IN SUNLIGHT.

**POND NOTES**

1. SEE SHEET 3.0 FOR BMP CONVERSION SEQUENCE.
2. FOREBAY DIVIDERS ARE TO BE INSTALLED WHILE CONVERTING FROM SEDIMENT BASIN TO WET POND.



NO.	DATE	REVISION
1	05-20-20	ISSUED TREATMENT & STORAGE ELEVATIONS
2	06-14-21	FINAL REVISIONS PER CONSULTANT REVIEW
3	06-14-21	FINAL SET

**SCM 3E DETAILS**  
 FOR  
**KALAS FALLS PHASE 1**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

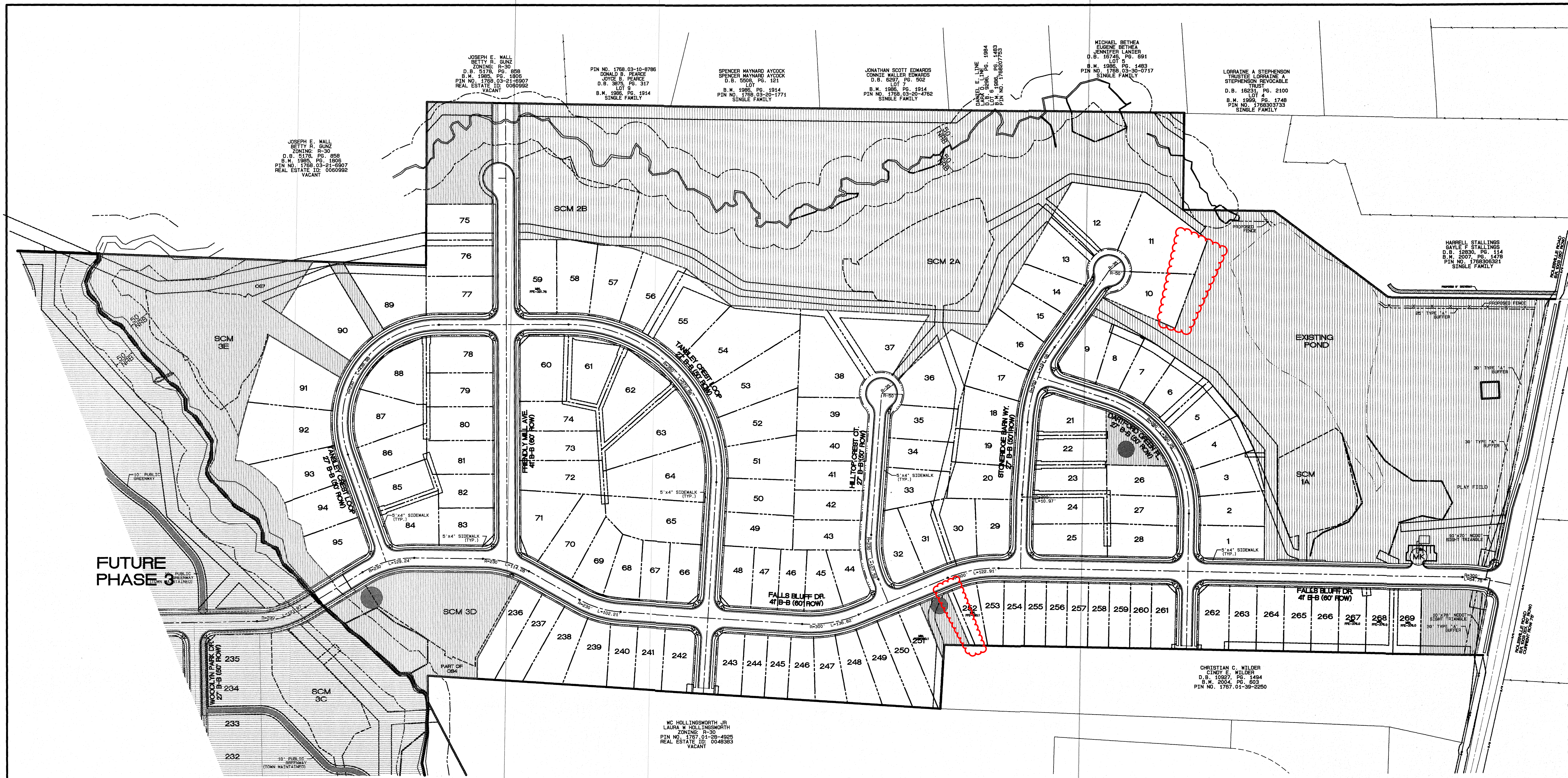
**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd. Ste. 450  
 Raleigh, NC 27607 919-469-1101

6.15.21  
 SHEET NO.









FUTURE PHASE 3

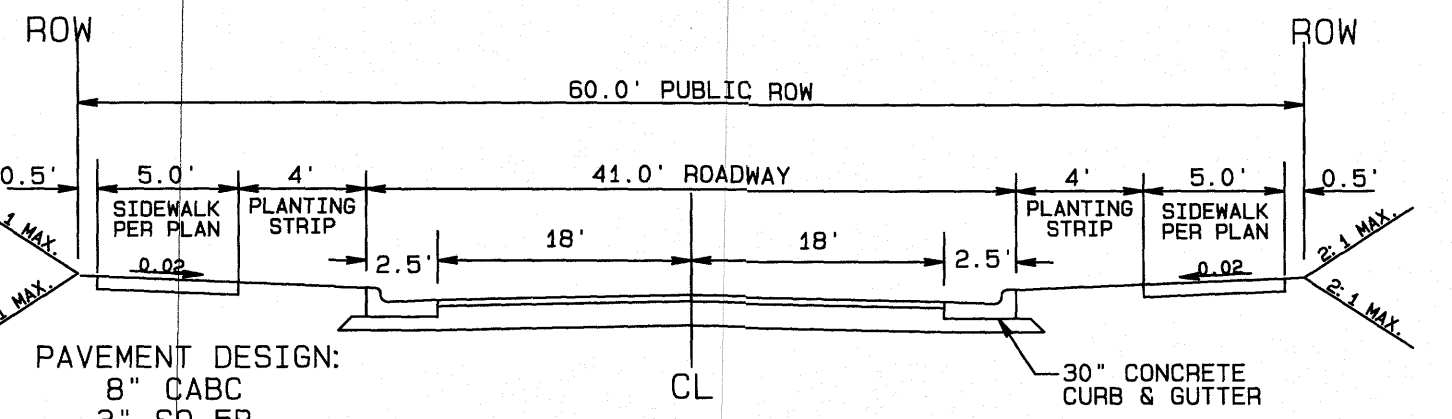
No.	DATE	REVISION
1	01-20-20	ISSUED SOMA LOCATION & ADJUSTMENTS PER TOR COMMENTS
2	03-25-21	REVISED SOMA LOCATION & ADJUSTMENTS PER TOR COMMENTS
3	06-25-21	FINAL SET
4	12-13-23	LOT AREA CHANGES TO DEL. USA, LOTS 10, 11, AND 28

PHASE 1 SITE PLAN OVERALL

FOR KALAS FALLS SITUATED AT 1832 ROLESVILLE ROAD WAKE COUNTY, NORTH CAROLINA FIRM # C-3881

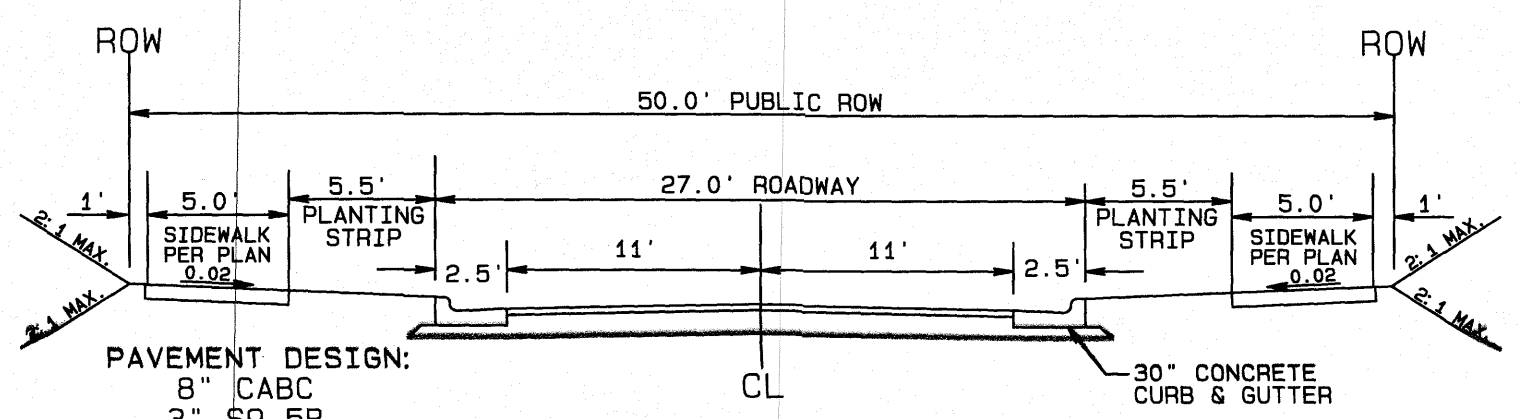
JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 9/19/2019

**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101



NOTE:  
 1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.  
 2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5" LIFTS.

41' B-B ON A 60' R/W  
 TYPICAL SECTION



NOTE:  
 1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.  
 2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5" LIFTS.

27' B-B ON A 50' R/W  
 TYPICAL SECTION

**SITE DATA**

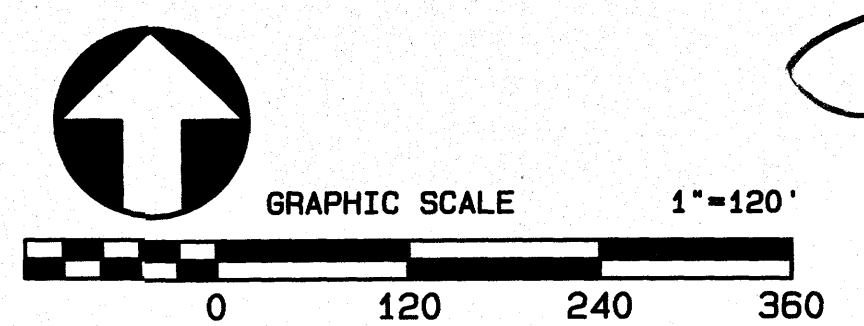
OWNER	MITCHELL MILL ROAD INVESTORS, LLC
DEED BOOK	105 WESTON ESTATES WAY
PARCEL ADDRESS	CARY, NC 27519
PIN NUMBER	1600 ROLESVILLE ROAD, ROLESVILLE NC
DEED ACREAGE	1767-29-5866, 1767-17-8299 (PARTIAL)
TOTAL PHASE 1 AREA	DB 011940 PG 01155, DB 016997 PG 02217
AREA IN ROW	284.44 AC
AREA IN OPEN SPACE PROVIDED	83.66 AC (MINUS ROW AREA TO RD CL)
EXISTING ZONING	10.51 AC
MAX. # OF LOTS	33.65 AC
SINGLE FAMILY LOTS PHASE 1	39.50 AC
MIN. LOT WIDTH	78 P.U.D
MIN. LOT SIZE PROVIDED	550 LOTS
LF OF PUBLIC STREETS	129 LOTS
PERCENT IMPERVIOUS	6,603 SF
	7,922 LF
	44.6%

**SETBACK TABLE SINGLE FAMILY**

	50'	50' W ALLEY	50'-59'	60'-69'	70'-79'	80'-100'	101' +
FRONT	20'	15'	20'	25'	25'	25'	25'
REAR	20'	15'	20'	25'	25'	25'	30'
SIDE	**	**	**	*	*	10'	12'
CORNER SIDE	10'	10'	10'	10'	10'	15'	18'
MIN. LOT SIZE	6,000	6,000	6,000	6,600	8,400	10,400	14,000

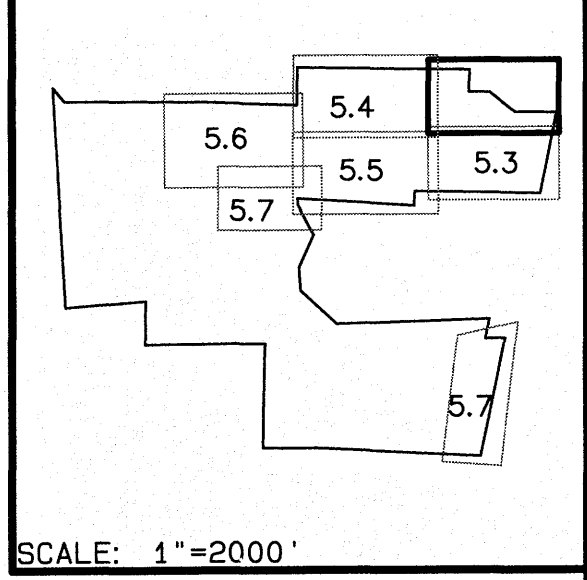
\* AGGREGATE 12" MIN. 5"  
 \*\* MIN. 3" AGGREGATE 10"

GENERAL NOTES:  
 1. SEE SHEET 5.2-5.6 FOR TOTAL NUMBER OF LOTS AND LOT SIZING.

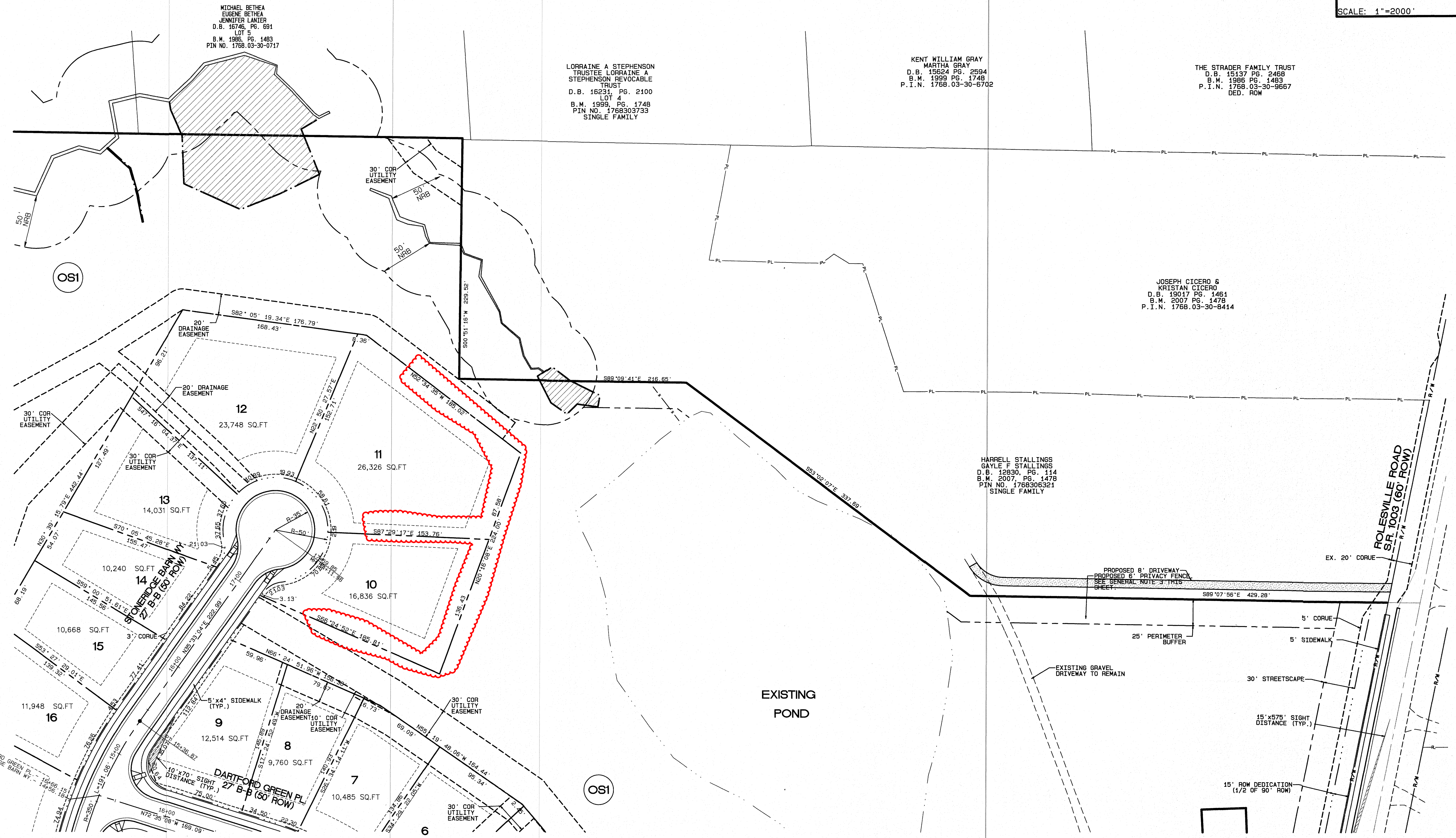


12-17-23  
 SHEET NO. 5.1





SCALE: 1"=2000'



LORRAINE A STEPHENSON  
TRUSTEE LORRAINE A  
STEPHENSON REVOCABLE  
TRUST  
LOT 4  
D.B. 16231, PG. 2100  
B.M. 1999, PG. 1748  
P.I.N. NO. 176803733  
SINGLE FAMILY

KENT WILLIAM GRAY  
MARTHA GRAY  
D.B. 15524 PG. 2594  
B.M. 1999 PG. 1748  
P.I.N. 1768.03-30-6702

THE STRADER FAMILY TRUST  
D.B. 15137 PG. 2468  
B.M. 1996 PG. 1463  
P.I.N. 1768.03-30-9667  
DED. ROW

JOSEPH CICERO &  
KRISTIAN CICERO  
D.B. 19017 PG. 1451  
B.M. 2007 PG. 1478  
P.I.N. 1768.03-30-8414

HARRELL STALLINGS  
GAYLE F STALLINGS  
D.B. 12830, PG. 114  
B.M. 2007, PG. 1478  
P.I.N. NO. 176806321  
SINGLE FAMILY

MICHAEL BETHEA  
EUGENE BETHEA  
JENNIFER LAWLER  
D.B. 16746, PG. 691  
LOT 5  
B.M. 1989, PG. 1483  
P.I.N. NO. 1768.03-30-0717

No.	DATE	REVISION
1	11-20-20	UPDATED SCHEMATIC LOCATION & ADJUSTMENTS PER TOP COMMENTS
2	05-20-21	FINAL REVISIONS PER CONSULTANT REVIEW
3	12-13-23	LOT AREA CHANGES TO DIST. 054, LOTS 10, 11, AND 282
4		

**SITE PLAN  
PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN  
Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

**ABBREVIATION**

- NRB- NEUSE RIVER BUFFER
- COR/CORUE- CITY OF RALEIGH UTILITY EASEMENT
- OPEN SPACE

**EXISTING LINETYPE LEGEND**

- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**PROPOSED LINETYPE LEGEND**

- PROPOSED PROPERTY-LINE
- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3' / 5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED 100 YR.
- PROPOSED 2' BLDG. RESTRICTION LINE

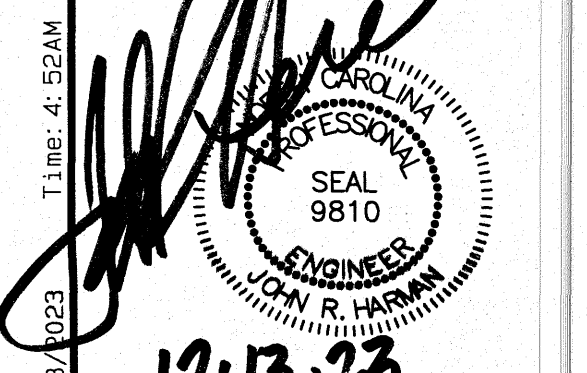
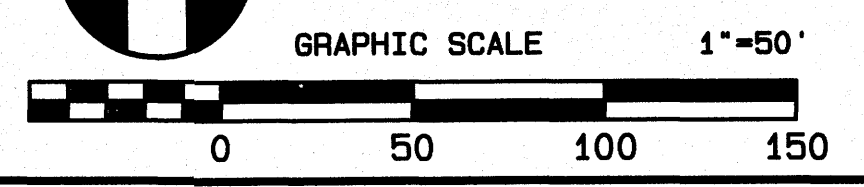
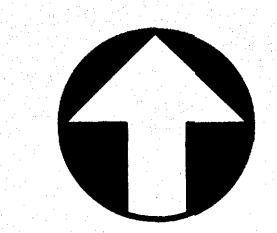
**SETBACK TABLE SINGLE FAMILY**

	50'	50' W ALLEY	50'-59'	60'-69'	70'-79'	80'-100'	101' +
FRONT	20'	15'	20'	25'	25'	25'	25'
REAR	20'	15'	20'	25'	25'	25'	30'
SIDE	**	**	**	*	*	10'	12'
CORNER SIDE	10'	10'	10'	10'	10'	15'	18'
MIN. LOT SIZE	6,000	6,000	6,000	6,600	8,400	10,400	14,000

\* AGGREGATE 12', MIN. 5'  
\*\* MIN. 3' AGGREGATE 10'

**GENERAL NOTE:**

- SIGHT DISTANCE TRIANGLES ARE 10'x70'. WHERE SIGHT LINES ENCRUSH ONTO A PRIVATE LOT A SIGHT EASEMENT IS REQUIRED.
- BACK OF CURB RADIUS AT INTERSECTIONS- RESIDENTIAL-RESIDENTIAL- 25' COLLECTOR-COLLECTOR- 30' ENTRANCE AT CUL-DE-SAC- 32.5' ENTRY ROADS-ROLESVILLE RD. - 35'
- PRIVACY FENCE LOCATION SHOWN IS APPROXIMATE AND TO BE FIELD ADJUSTED AROUND EXISTING CONDITIONS.
- THE CONTRACTOR IS TO COORDINATE THE LOCATION OF THE FENCE WITH THE ADJACENT PROPERTY OWNER PRIOR TO INSTALLATION.



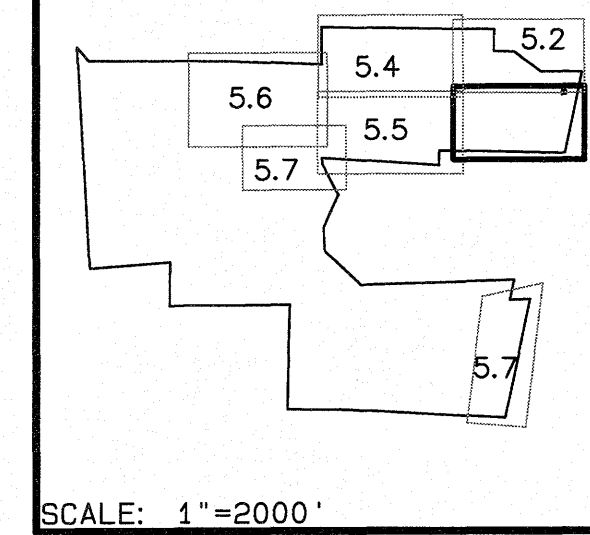
12-13-23

SHEET NO.

5.2

Plot Date: 12/13/2023 Time: 4:52AM FILE: Z:\Jobs\9900\Watkins Property\dwg\Map\Kalas Falls Base Phase 1.prn





SCALE: 1"=2000'



NO.	DATE	REVISION
1	10-20-21	UPDATES PER COMMENTS
2	10-21-21	PLAN REVISIONS PER CONSULTANT REVIEW
3	05-25-21	FINAL SET

**SITE PLAN PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

SETBACK TABLE SINGLE FAMILY

	50'	50' W ALLEY	50'-59'	60'-69'	70'-79'	80'-100'	101' +
FRONT	20'	15'	20'	25'	25'	25'	25'
REAR	20'	15'	20'	25'	25'	25'	30'
SIDE	**	**	**	*	*	10'	12'
CORNER SIDE	10'	10'	10'	10'	10'	15'	18'
MIN. LOT SIZE	6,000	6,000	6,000	6,600	8,400	10,400	14,000

\* AGGREGATE 12', MIN. 5'  
\*\* MIN. 3' AGGREGATE 10'

ABBREVIATION

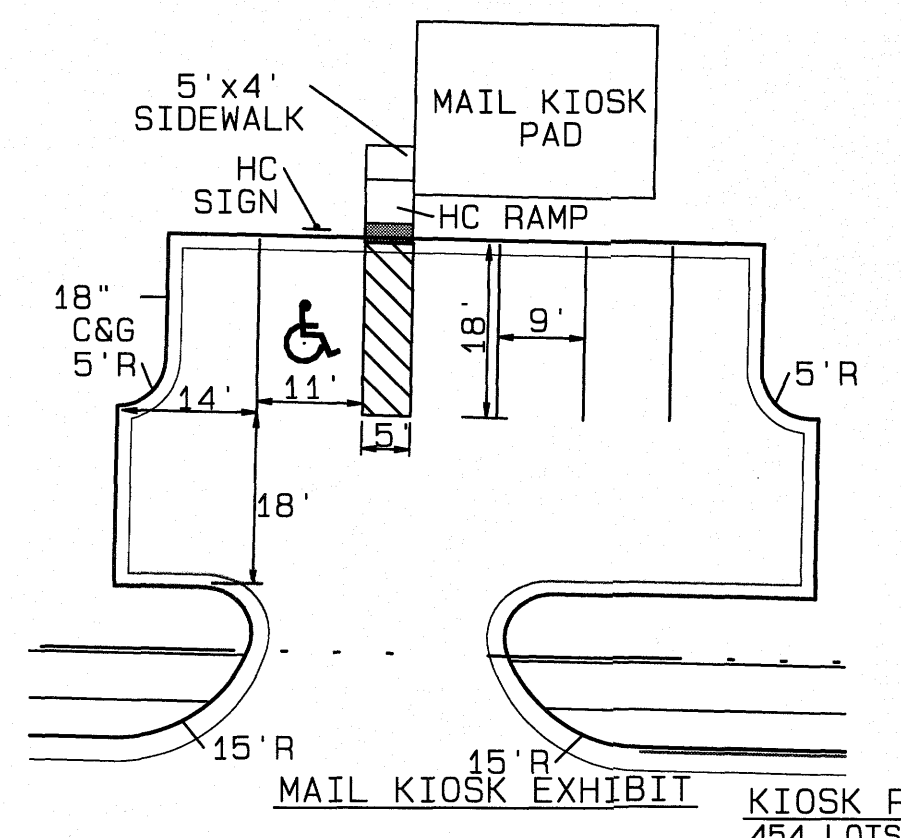
NRB- NEUSE RIVER BUFFER		OPEN SPACE
COR/CORUE- CITY OF RALEIGH UTILITY EASEMENT		

EXISTING LINETYPE LEGEND

	PROPERTY BOUNDARY
	EXISTING TREE LINE
	EXISTING WETLAND
	EXISTING 50' NRB
	CENTERLINE OF STREAM
	EXISTING WATER ELEVATION
	EXISTING RIGHT OF WAY

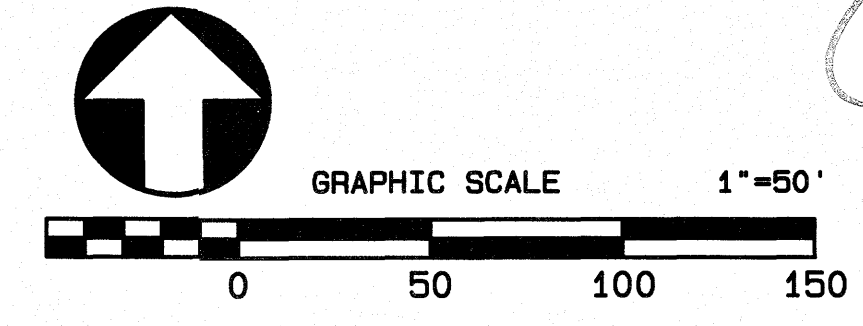
PROPOSED LINETYPE LEGEND

	PROPOSED PROPERTY-LINE
	PROPOSED BUILDING SETBACK
	PROPOSED EASEMENT
	PROPOSED 3'/5' CORUE
	PROPOSED RIGHT OF WAY
	PROPOSED ROAD CL
	PROPOSED 30" CURB AND GUTTER
	PROPOSED 100 YR.
	PROPOSED 2' BLDG. RESTRICTION LINE



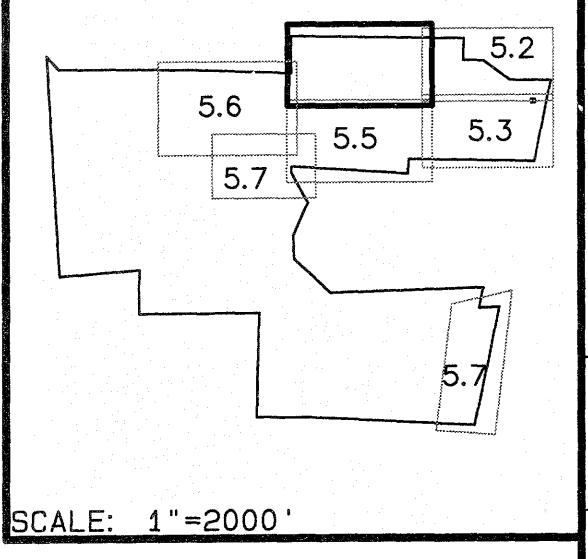
**KIOSK PARKING REQUIREMENTS:**  
454 LOTS/3 KIOSKS= 151.3 OR 152 MAIL BOXES  
6 STALLS REQUIRED  
6 STALL PROVIDED

**GENERAL NOTE:**  
1. SIGHT DISTANCE TRIANGLES ARE 10'x70'. WHERE SIGHT LINES ENCHROACH ONTO A PRIVATE LOT A SIGHT EASEMENT IS REQUIRED.  
2. BACK OF CURB RADIUS AT INTERSECTIONS- RESIDENTIAL-RESIDENTIAL- 28' RESIDENTIAL-COLLECTOR- 30' COLLECTOR-COLLECTOR- 30' ENTRANCE AT CUL-DE-SAC- 32.5' ENTRY ROADS-ROLESVILLE RD.- 35'



Plot Date: 7/30/2021 Time: 3:19PM  
FILE: Z:\Jobs\9900\Wet\18 Property\1832 Kalas Falls Base Phase 1.dwg  
4-28-21  
SHEET NO. **5.3**





SCALE: 1"=2000'

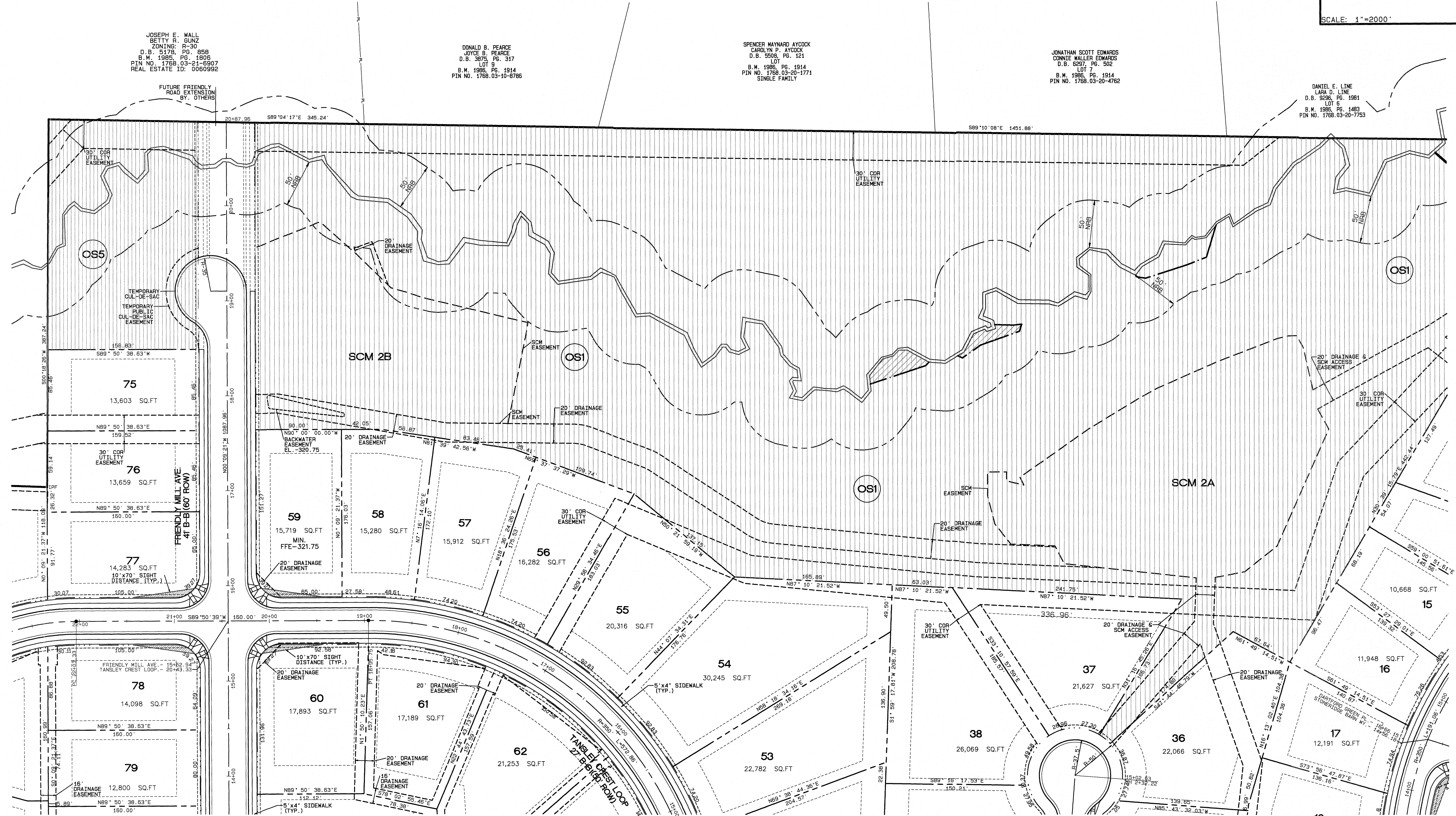
JOSEPH E. WALL  
BETTY R. GUNZ  
ZONING: R-30  
D.B. 5179, PG. 858  
B.M. 1985, PG. 1805  
PIN NO. 1768.03-21-5907  
REAL ESTATE ID: 0060992

DONALD B. PEARCE  
JOYCE B. PEARCE  
D.B. 3875, PG. 317  
LOT 9  
B.M. 1986, PG. 1914  
PIN NO. 1768.03-10-8786

SPENCER MAYNARD AYCOCK  
CAROLYN P. AYCOCK  
D.B. 5508, PG. 121  
LOT  
B.M. 1986, PG. 1914  
PIN NO. 1768.03-20-1771  
SINGLE FAMILY

JONATHAN SCOTT EDWARDS  
CONNIE WALLER EDWARDS  
D.B. 6287, PG. 502  
LOT 7  
B.M. 1986, PG. 1914  
PIN NO. 1768.03-20-4782

DANIEL E. LINE  
LARA D. LINE  
D.B. 3698, PG. 1981  
LOT 6  
B.M. 1986, PG. 1483  
PIN NO. 1768.03-20-7753



No.	DATE	REVISION
1	11-20-20	UPDATED SCHEMATIC LOCATION & ADJUSTMENTS PER TOR COMMENTS
2	06-14-21	FINAL SET
3	06-14-21	FINAL SET

**SITE PLAN**  
**PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN**  
Engineering  
Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

**EXISTING LINETYPE LEGEND**

	PROPERTY BOUNDARY
	EXISTING TREE LINE
	EXISTING WETLAND
	EXISTING 50' NRB
	CENTERLINE OF STREAM
	EXISTING WATER ELEVATION
	EXISTING RIGHT OF WAY

**PROPOSED LINETYPE LEGEND**

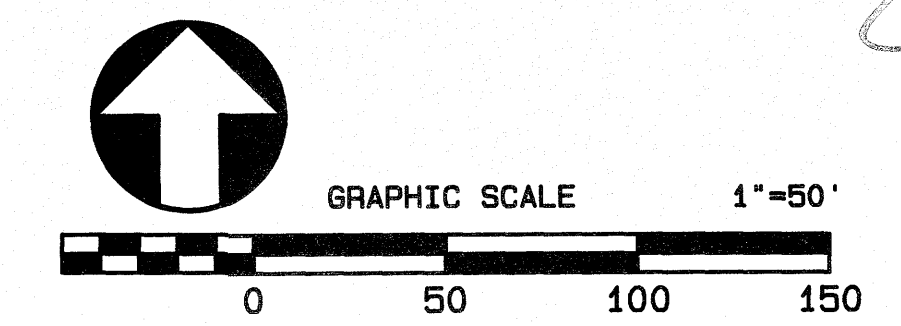
	PROPOSED PROPERTY-LINE
	PROPOSED BUILDING SETBACK
	PROPOSED EASEMENT
	PROPOSED 3'/5' CORUE
	PROPOSED RIGHT OF WAY
	PROPOSED ROAD CL
	PROPOSED 30" CURB AND GUTTER
	PROPOSED 100 YR.
	PROPOSED 2' BLDG. RESTRICTION LINE

**SETBACK TABLE SINGLE FAMILY**

	50'	50'	60'-69'	70'-79'	80'-100'	101' +
FRONT	20'	15'	20'	25'	25'	25'
REAR	20'	15'	20'	25'	25'	30'
SIDE	**	**	**	*	10'	12'
CORNER SIDE	10'	10'	10'	10'	15'	18'
MIN. LOT SIZE	6,000	6,000	6,000	6,600	8,400	10,400
	* AGGREGATE 12', MIN. 5'					
	** MIN. 3' AGGREGATE 10'					

**GENERAL NOTE:**  
1. SIGHT DISTANCE TRIANGLES ARE 10'x70'. WHERE SIGHT LINES ENCRUSH ONTO A PRIVATE LOT A SIGHT EASEMENT IS REQUIRED.  
2. BACK OF CURB RADIUS AT INTERSECTIONS- RESIDENTIAL-RESIDENTIAL- 28' RESIDENTIAL-COLLECTOR- 30' COLLECTOR-COLLECTOR- 30' ENTRANCE AT CUL-DE-SAC- 32.5' ENTRY ROADS-ROLESVILLE RD.- 35'

**ABBREVIATION**  
NRB- NEUSE RIVER BUFFER  
COR/CORUE- CITY OF RALEIGH UTILITY EASEMENT



Time: 7:55AM  
PLOT Date: 16/14/2021  
FILE: Z:\Jobs\9900\Wak\Ins Property\Wdg\Base Map\Kalas Falls Base Phase 1.prn

AMERICAN ENGINEERING ASSOCIATES-SOUTHEAST, P.A.  
SEAL 9810  
JOHN R. HARMON  
ENGINEER

SHEET NO.  
**5.4**



**PROPOSED LINETYPE LEGEND**

- PROPOSED PROPERTY LINE
- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3' / 5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED 100 YR.
- PROPOSED 2' BLDG. RESTRICTION LINE

**EXISTING LINETYPE LEGEND**

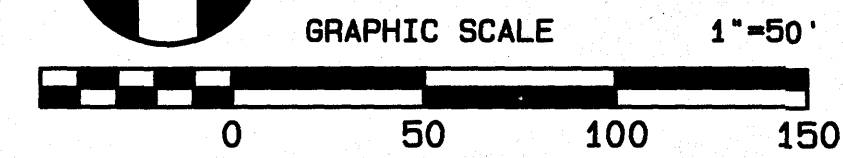
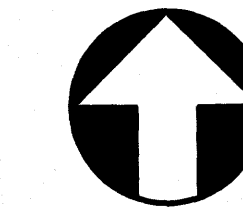
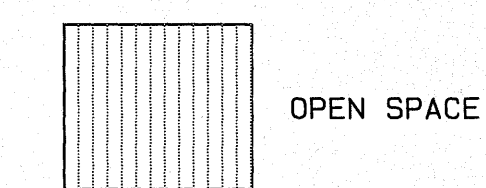
- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**ABBREVIATION**

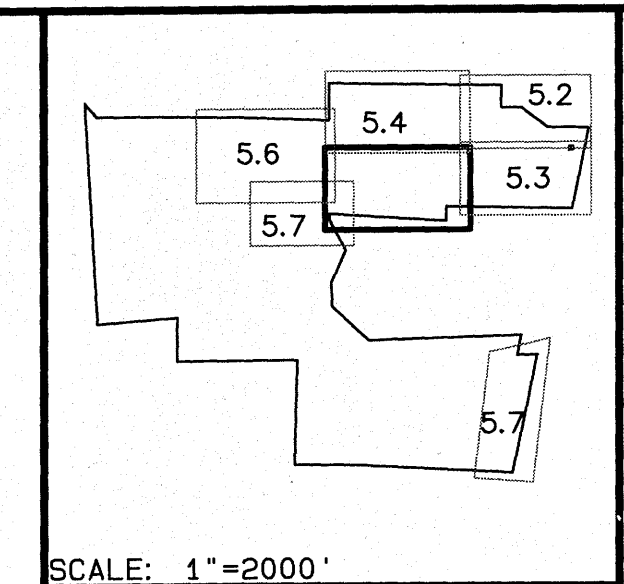
- NRB- NEUSE RIVER BUFFER
- COR/CORUE- CITY OF RALEIGH UTILITY EASEMENT

**GENERAL NOTE:**

1. SIGHT DISTANCE TRIANGLES ARE 10'x70'. WHERE SIGHT LINES ENCRACH ONTO A PRIVATE LOT A SIGHT EASEMENT IS REQUIRED.
2. BACK OF CURB RADIUS AT INTERSECTIONS-  
 RESIDENTIAL-RESIDENTIAL- 28'  
 RESIDENTIAL-COLLECTOR- 30'  
 COLLECTOR-COLLECTOR- 30'  
 ENTRANCE AT CUL-DE-SAC- 32.5'  
 ENTRY ROADS-ROLESVILLE RD.- 35'



SCALE: 1"=2000'



**SETBACK TABLE SINGLE FAMILY**

	50'	50' W ALLEY	50'-59'	60'-69'	70'-79'	80'-100'	101' +
FRONT	20'	15'	20'	25'	25'	25'	25'
REAR	20'	15'	20'	25'	25'	25'	30'
SIDE	**	**	**	*	*	10'	12'
CORNER SIDE	10'	10'	10'	10'	10'	15'	18'
MIN. LOT SIZE	6,000	6,000	6,000	6,500	8,400	10,400	14,000

\* AGGREGATE 12'. MIN. 5'  
 \*\* MIN. 3' AGGREGATE 10'



NO.	DATE	REVISION
1	11-20-20	UPDATED SCADA LOCATION & ADJUSTMENTS PER TOR COMMENTS
2	05-25-21	FINAL SETBACKS PER TOR CONSULTANT REVIEW
3	05-25-21	FINAL SETBACKS PER TOR CONSULTANT REVIEW
4	12-13-23	LOT AREA CHANGES TO USL, CSA, LOTS 10, 11, AND 252

**SITE PLAN PHASE 1**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607-919-469-1101

Time: 4:28AM  
 Plot Date: 12/13/23  
 SEAL 9810  
 PROFESSIONAL ENGINEER  
 W. H. HARRIS

SHEET NO.  
**5.5**

WC HOLLINGSWORTH JR  
 LAURA W HOLLINGSWORTH  
 ZONING: R-30  
 PIN NO. 1767.01-28-4925  
 REAL ESTATE ID: 0648383  
 VACANT

VARIABLE WIDTH TEMP.  
 CONSTRUCTION EASEMENT  
 TO BE REMOVED AT TIME OF  
 ACCEPTANCE OF ROAD EXTENSION.  
 END OF PAVEMENT  
 STATION: +833.77

VARIABLE WIDTH TEMP.  
 CONSTRUCTION EASEMENT  
 TO BE REMOVED AT TIME OF  
 ACCEPTANCE OF ROAD EXTENSION.

WC HOLLINGSWORTH JR  
 LAURA W HOLLINGSWORTH  
 ZONING: R-30  
 PIN NO. 1767.01-28-4925  
 REAL ESTATE ID: 0648383  
 VACANT

Plot Date: 12/13/23



**PROPOSED LINETYPE LEGEND**

- PROPOSED PROPERTY-LINE
- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3' / 5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED 100 YR.
- PROPOSED 2' BLDG. RESTRICTION LINE

**EXISTING LINETYPE LEGEND**

- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**SETBACK TABLE SINGLE FAMILY**

	50'	50' W ALLEY	50'-59'	60'-69'	70'-79'	80'-100'	101' +
FRONT	20'	15'	20'	25'	25'	25'	25'
REAR	20'	15'	20'	25'	25'	25'	30'
SIDE	**	**	**	*	*	10'	12'
CORNER SIDE	10'	10'	10'	10'	10'	15'	18'
MIN. LOT SIZE	6,000	6,000	6,000	6,600	8,400	10,400	14,000

\* AGGREGATE 12', MIN. 5'  
\*\* MIN. 3' AGGREGATE 10'

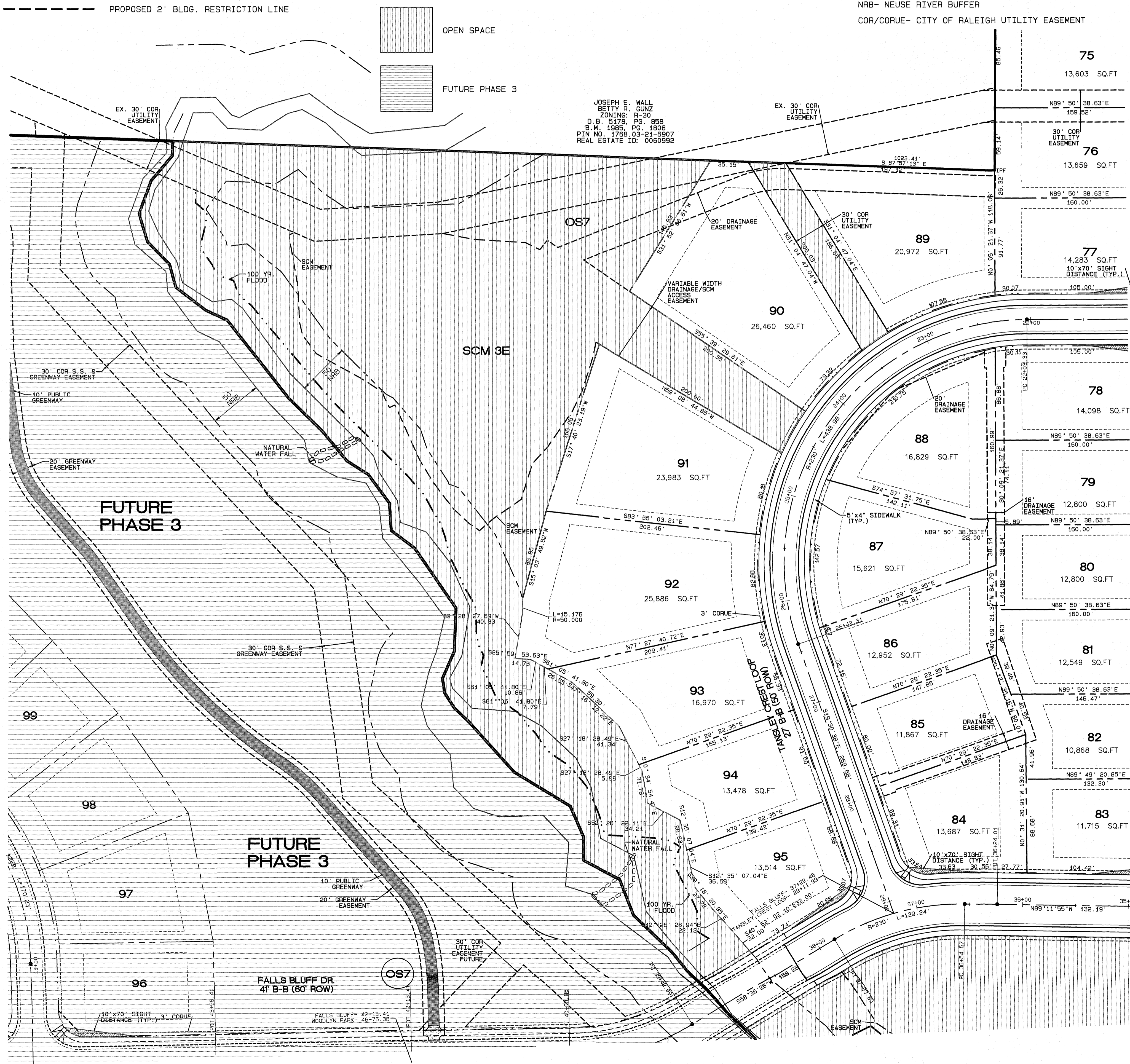
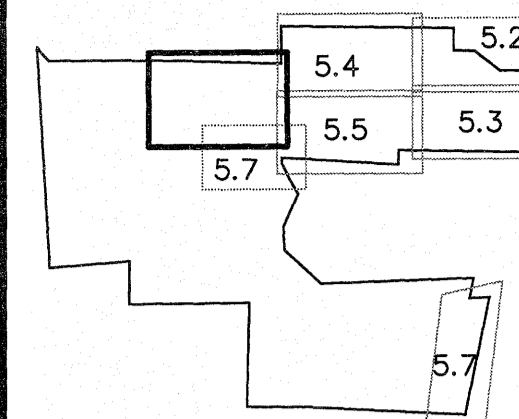
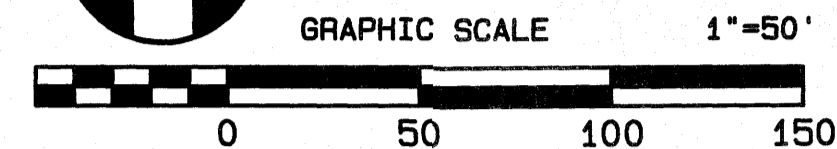
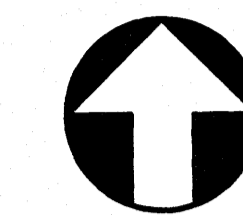
**ABBREVIATION**

- NRB- NEUSE RIVER BUFFER
- COR/CORUE- CITY OF RALEIGH UTILITY EASEMENT

**GENERAL NOTE:**

1. SIGHT DISTANCE TRIANGLES ARE 10'x70'. WHERE SIGHT LINES ENCRACH ONTO A PRIVATE LOT A SIGHT EASEMENT IS REQUIRED.
2. BACK OF CURB RADIUS AT INTERSECTIONS-  
RESIDENTIAL-RESIDENTIAL- 28'  
RESIDENTIAL-COLLECTOR- 30'  
COLLECTOR-COLLECTOR- 30'  
ENTRANCE AT CUL-DE-SAC- 32.5'  
ENTRY ROADS-ROLESVILLE RD. - 35'

SCALE: 1"=2000'



NO.	DATE	REVISION
1	11-20-20	UPDATED SCHEMATIC LOCATION & ADJUSTMENTS PER FOR COMMENTS
2	05-19-21	FINAL REVISIONS PER FOR CONSULTANT REVIEW
3	05-14-21	FINAL SET

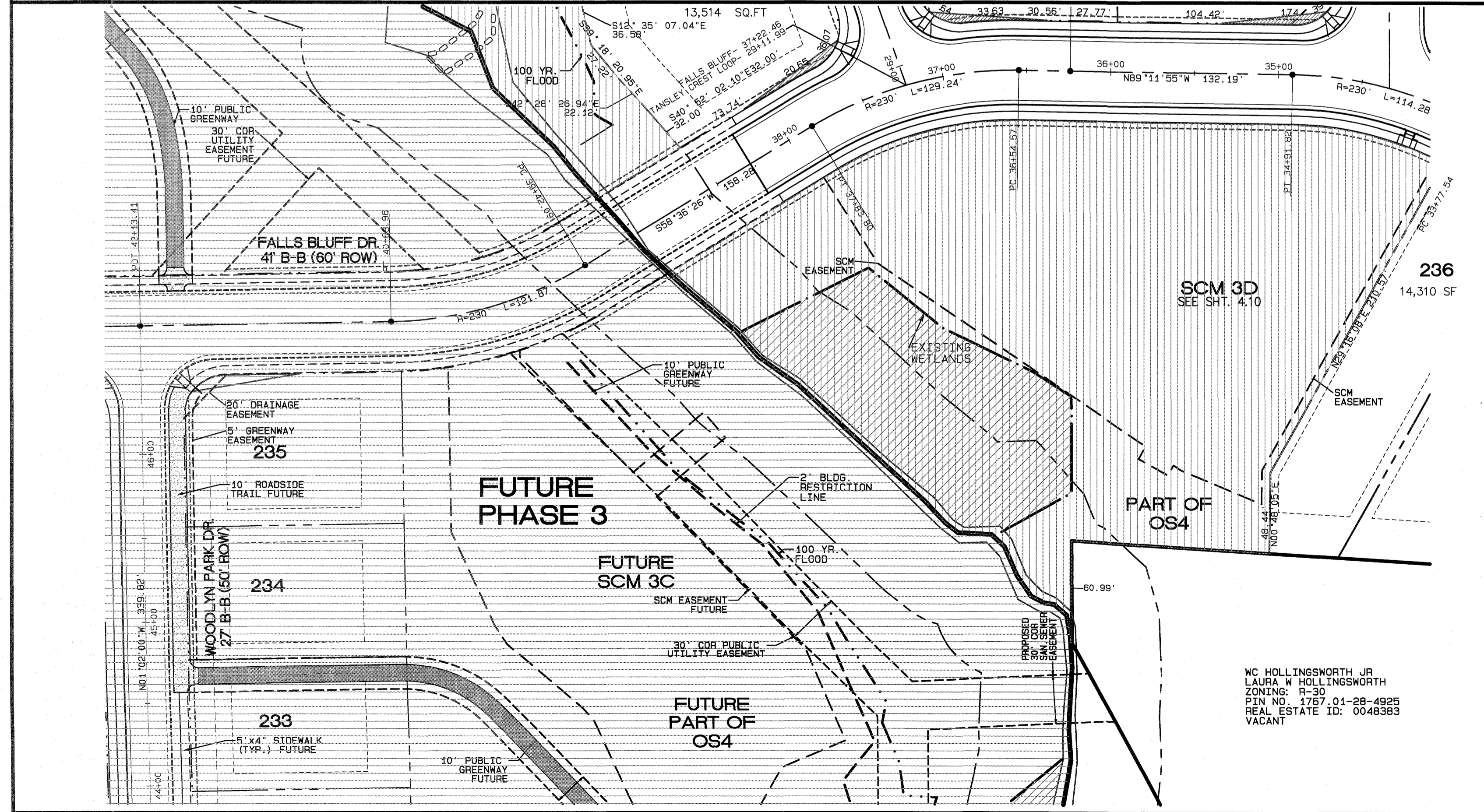
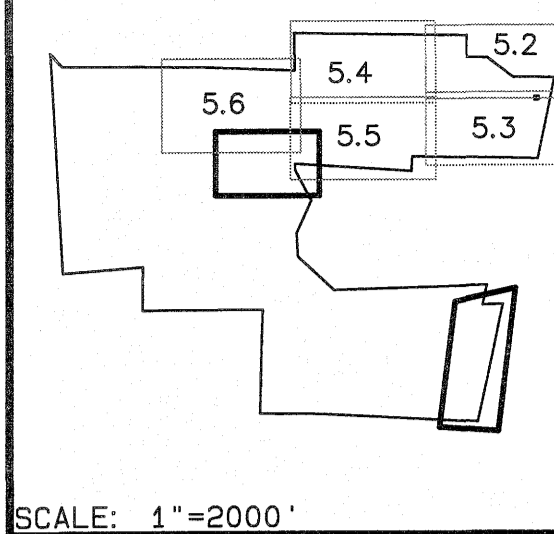
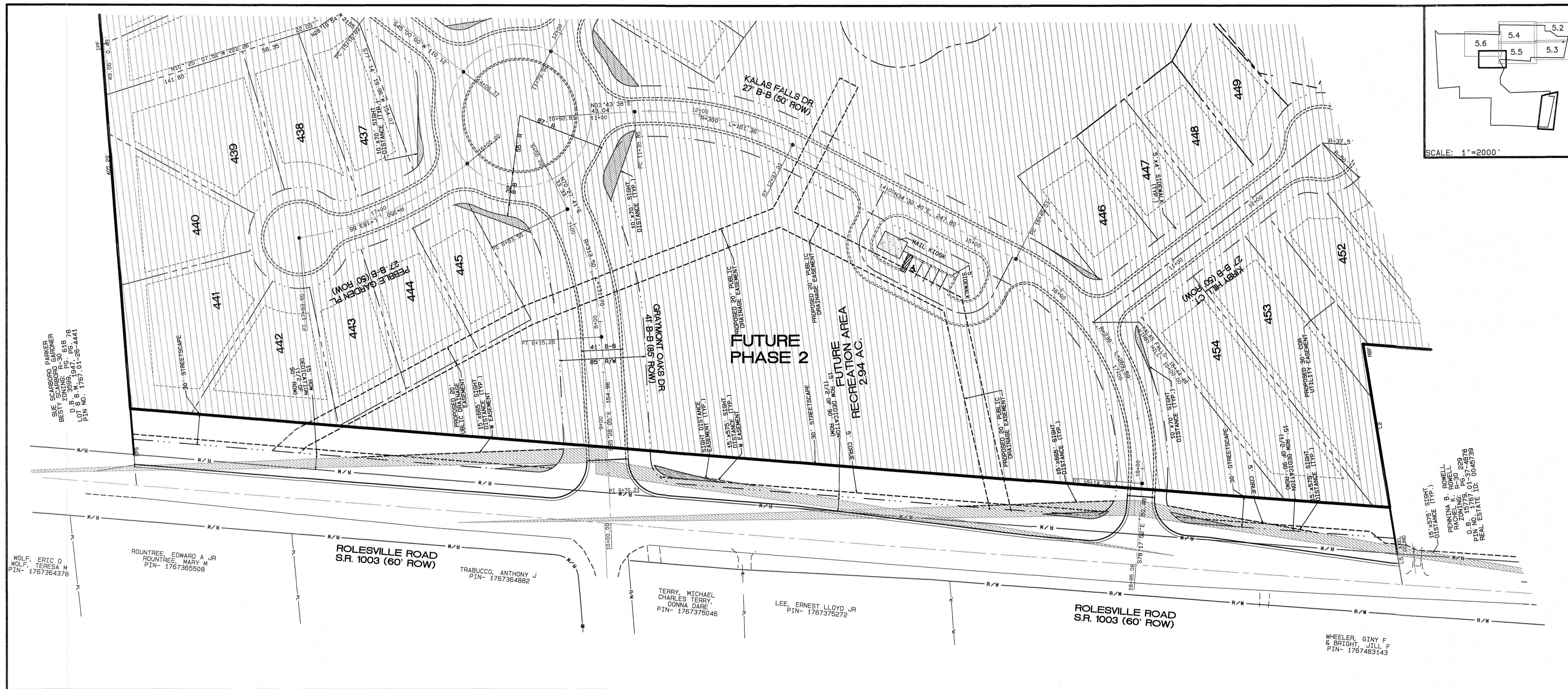
**SITE PLAN  
PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN**  
Engineering  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

Plot Date: 6/14/2021 Time: 7:57AM  
FILE: Z:\Jobs\9800\Watkins Property\dwg\Base Map\Kalas Falls Base Phase 1.dwg  
SHEET NO.  
**5.6**





SETBACK TABLE SINGLE FAMILY

	50'	50' W ALLEY	50'-59'	60'-69'	70'-79'	80'-100'	101' +
FRONT	20'	15'	20'	25'	25'	25'	25'
REAR	20'	15'	20'	25'	25'	25'	30'
SIDE	**	**	**	*	*	10'	12'
CORNER SIDE	10'	10'	10'	10'	10'	15'	18'
MIN. LOT SIZE	6,000	6,000	6,000	6,000	8,400	10,400	14,000

\* AGGREGATE 12', MIN. 5'  
\*\* MIN. 3' AGGREGATE 10'

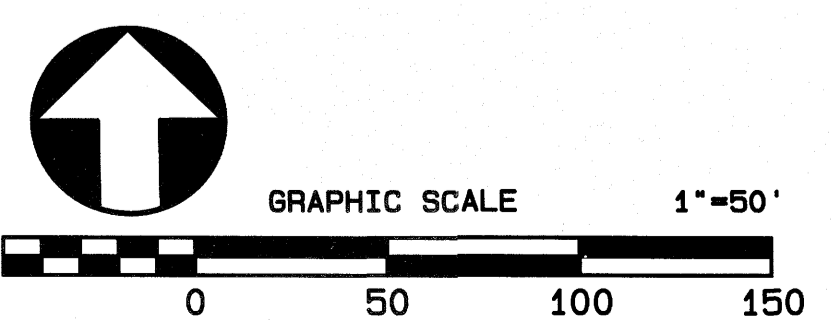
EXISTING LINETYPE LEGEND

	PROPERTY BOUNDARY
	EXISTING TREE LINE
	EXISTING WETLAND
	EXISTING 50' NRB
	CENTERLINE OF STREAM
	EXISTING WATER ELEVATION
	EXISTING RIGHT OF WAY

PROPOSED LINETYPE LEGEND

	PROPOSED PROPERTY LINE
	PROPOSED BUILDING SETBACK
	PROPOSED EASEMENT
	PROPOSED 3'/5' CORUE
	PROPOSED RIGHT OF WAY
	PROPOSED ROAD CL
	PROPOSED 30" CURB AND GUTTER
	PROPOSED 100 YR.
	PROPOSED 2' BLDG. RESTRICTION LINE

GENERAL NOTE:  
 1. NO DRAINAGE IN THE PHASE 3 AREA WHICH INCLUDES THE CULVERT CROSSING IS TO BE CONSTRUCTED WITH PHASE 1.  
 2. NO ADDITIONAL IMPROVEMENTS IN THE PHASE 2 AREA EXCEPT FOR ROLESVILLE RD. IMPROVEMENTS AND THE DRAINAGE OUTFALL ARE TO BE CONSTRUCTED WITH PHASE 1.



No.	DATE	REVISION
1	11-20-20	UPDATED SITE LOCATION & ADJUSTMENTS PER TOR COMMENTS
2	02-26-21	ADDED INDOT COMMENTS

**SITE PLAN PHASE 1**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

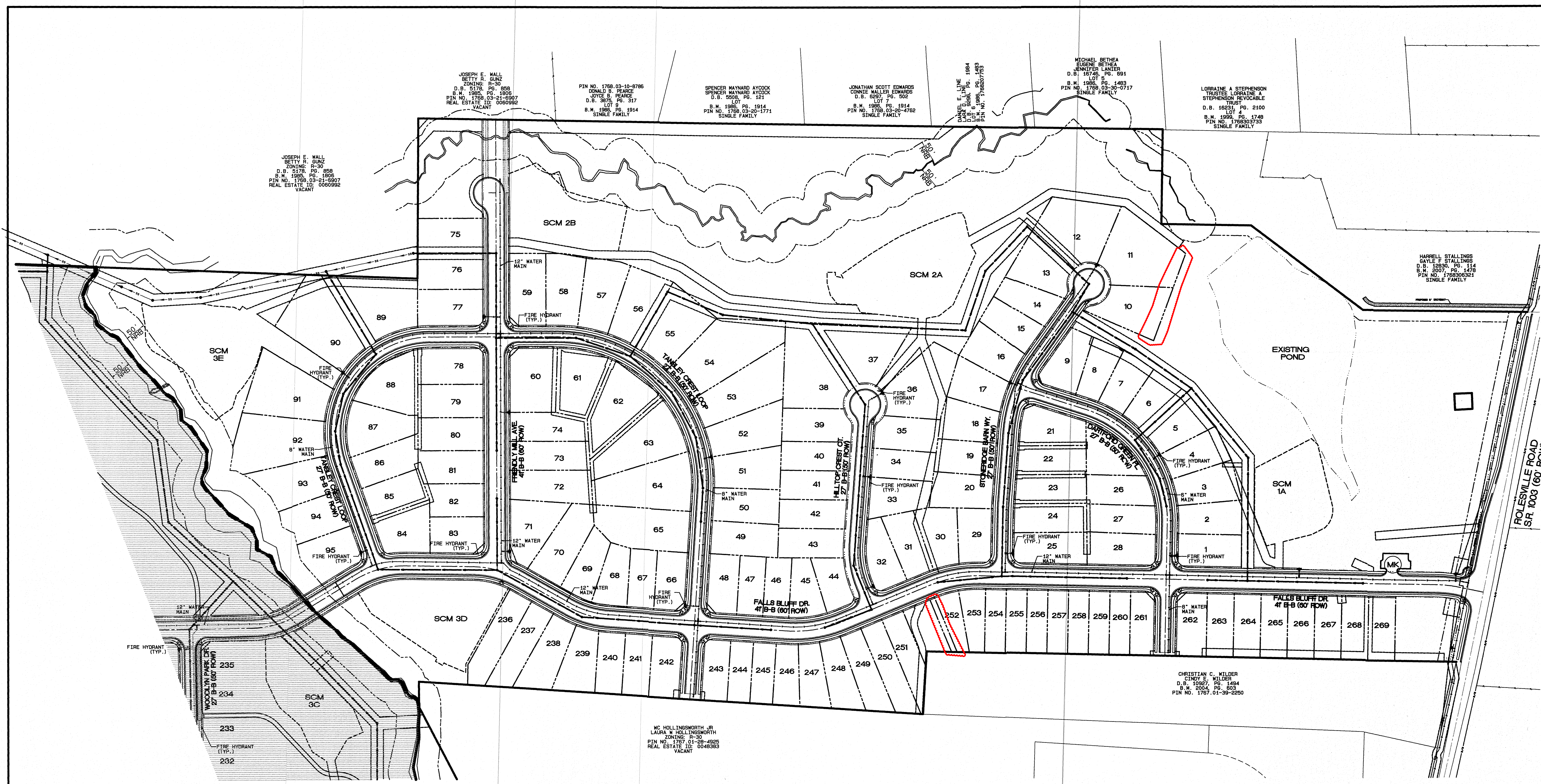
JOB NUMBER:	9900
CHECKED BY:	JRH
DRAWN BY:	BAH
DATE:	4/24/2020

**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 875 Walnut Street, Suite 360  
 Cary, NC 27511 919-469-1101

Professional Engineer Seal for Sean R. Harmon, License No. 9810.  
 SHEET NO. **5.7**

Plot Date: 15/20/2021 11:06:25AM  
 FILE: Z:\Jobs\9900\Watkins\Property\Uwg\Base Map\Kalas Falls Base Phase 1.dwg





**EXISTING LINETYPE LEGEND**

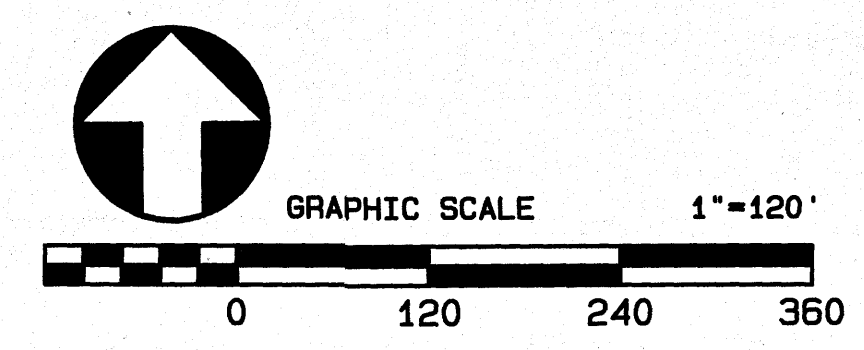
- PROPERTY BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**PROPOSED LINETYPE LEGEND**

- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3' / 5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED SANITARY SEWER
- PROPOSED WATERLINE
- PROPOSED STORM DRAINAGE
- PROPOSED DRAINAGE DITCH

**UTILITY LEGEND**

- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED SEWER SERVICE
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- PROPOSED FLARED END SECTION
- PROPOSED FIRE HYDRANT
- PROPOSED WATER SERVICE
- PROPOSED WATER VALVE
- PROPOSED WATERMAIN REDUCER



No.	DATE	REVISION
1	05-13-21	PLAN REVISIONS PER DR CONSULTANT REVIEW
2	05-14-21	FINAL SET
3	12-13-23	LOT AREA CHANGES TO DBL, GSA, LOTS 10, 11, AND 282

**UTILITY PLAN**  
**PHASE 1 OVERALL**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

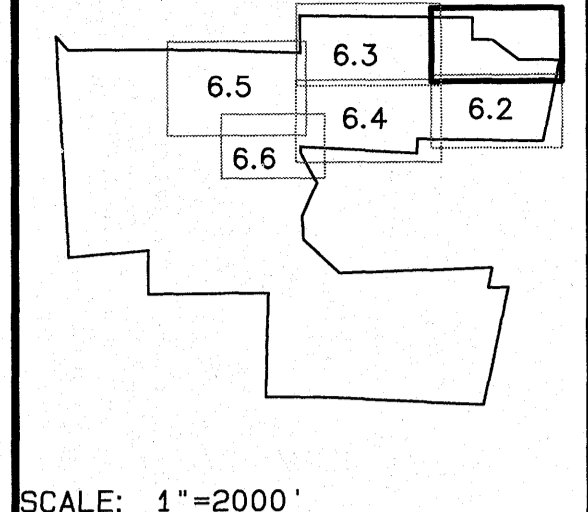
JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

**AMERICAN**  
**Engineering**  
 Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

Plot Date: 12/13/23  
 S-4824  
 W-3784  
 SEAL  
 9810  
 12-13-23  
 SHEET NO.  
**6.0**

FILE: Z:\Jobs\9900\Watkins Property\dwg\Base Map\Kalas Falls Base Phase 1.prn





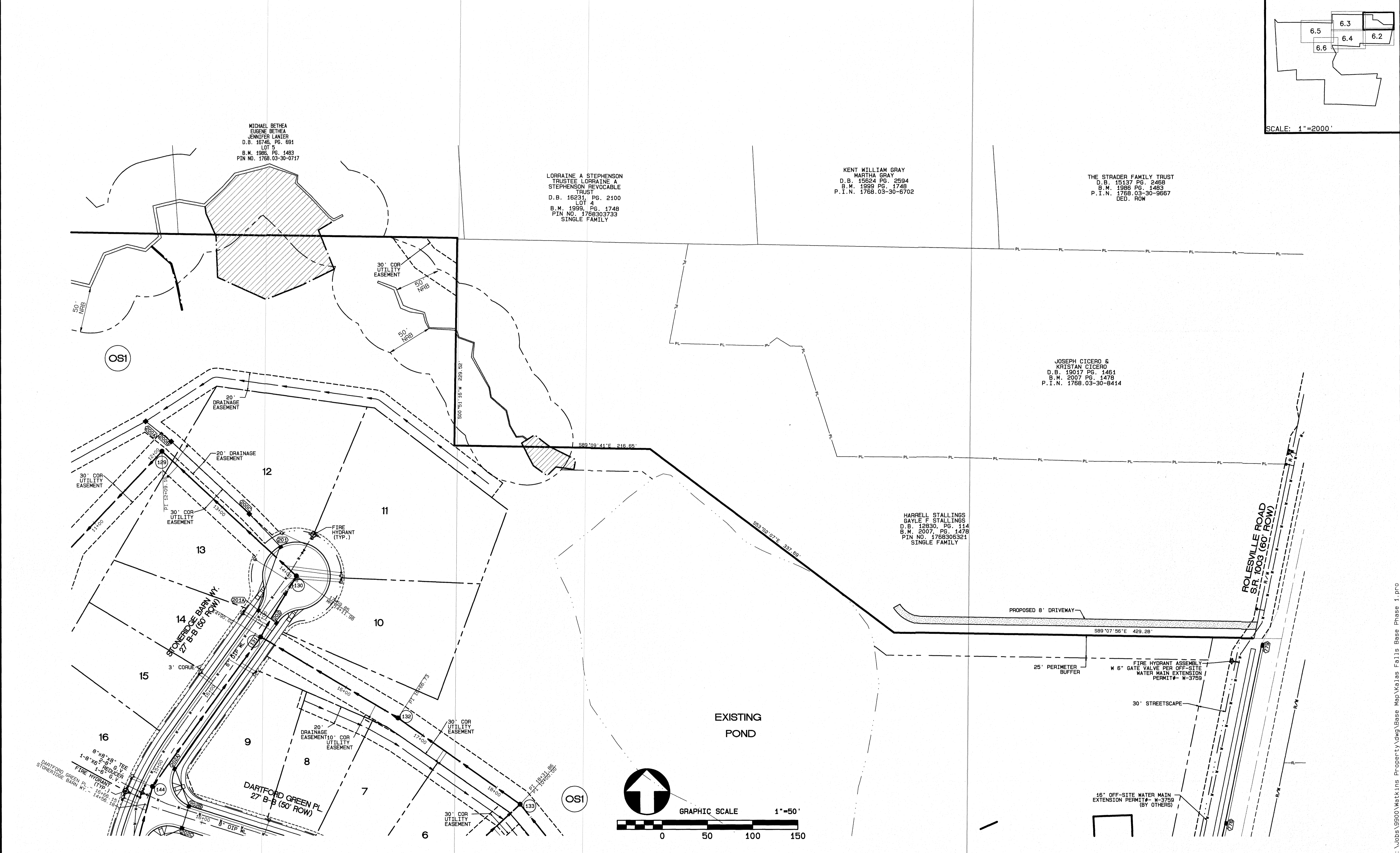
NO.	DATE	REVISION
1	08-13-21	PLAN REVISIONS PER FOR CONSULTANT REVIEW.
2	08-14-21	FINAL SET
3	12-13-23	LOT AREA CHANGES TO GSI, USE LOTS 10, 11, AND 252

**UTILITY PLAN  
PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN**  
Engineering  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

Plot Date: 12/13/23 Time: 4:51AM  
S-4824  
W-3784  
12-13-23  
SEAL  
9810  
SHEET NO.  
**6.1**



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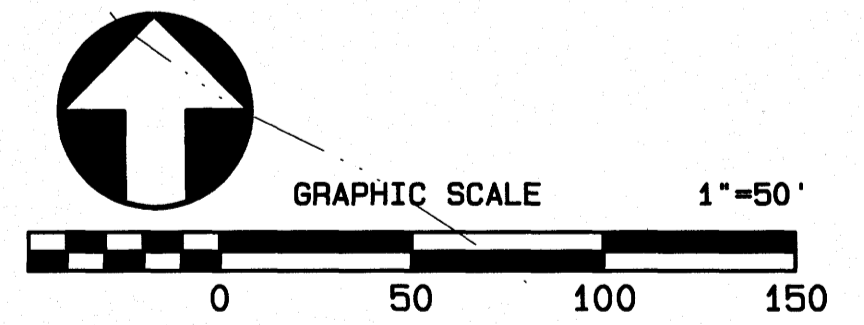
- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3'/5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED SANITARY SEWER
- PROPOSED WATERLINE
- PROPOSED STORM DRAINAGE
- PROPOSED DRAINAGE DITCH

**EXISTING LINETYPE LEGEND**

- PROPERTY BOUNDARY
- EXISTING SANITARY SEWER
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

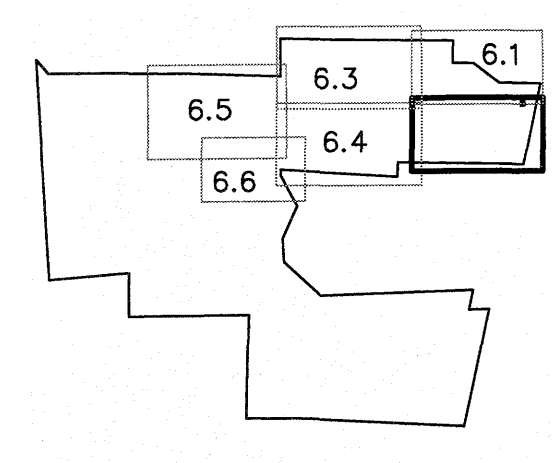
**UTILITY LEGEND**

- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED SEWER SERVICE
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- ⊕ PROPOSED FLARED END SECTION
- ⊕ PROPOSED FIRE HYDRANT
- PROPOSED WATER SERVICE
- ⊕ PROPOSED WATER VALVE
- △ PROPOSED WATERMAIN REDUCER

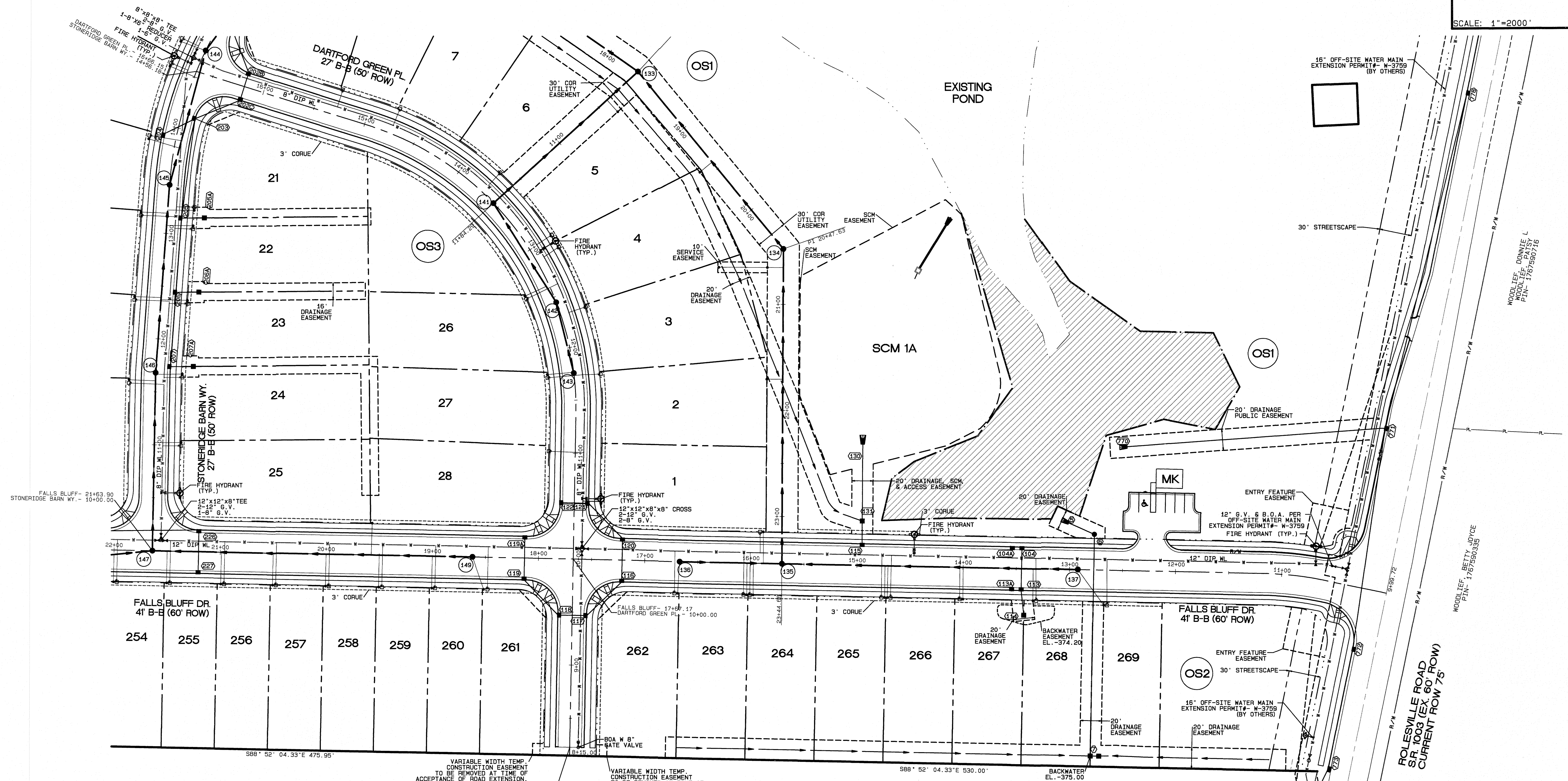


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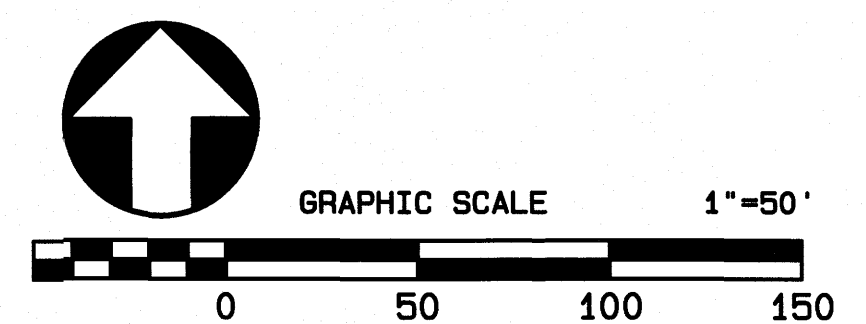




SCALE: 1"=2000'



CHRISTIAN C. WILDER  
CINDY E. WILDER  
D.B. 10927, PG. 1494  
S.W. 2004, PG. 603  
PIN NO. 1767-01-39-2250



**PROPOSED LINETYPE LEGEND**

- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3'/5" CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED SANITARY SEWER
- PROPOSED WATERLINE
- PROPOSED STORM DRAINAGE
- PROPOSED DRAINAGE DITCH

**EXISTING LINETYPE LEGEND**

- PROPERTY BOUNDARY
- SS --- EXISTING SANITARY SEWER
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- RW --- EXISTING RIGHT OF WAY

**UTILITY LEGEND**

- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED SEWER SERVICE
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- PROPOSED FLARED END SECTION
- ⊙ PROPOSED FIRE HYDRANT
- PROPOSED WATER SERVICE
- ⊗ PROPOSED WATER VALVE
- △ PROPOSED WATERMAIN REDUCER

**UTILITY PLAN  
PHASE 1**

FOR  
**KALAS FALLS**

SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA

FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020



American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # S-4824.

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # W-3784.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

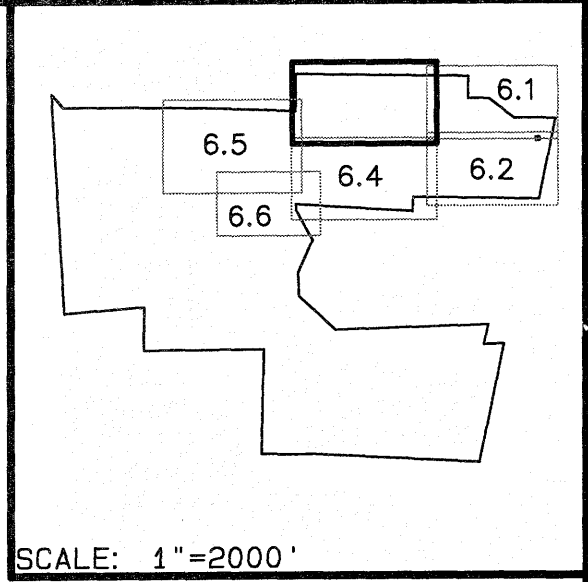
City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer

SEAL 9810  
APR 25 2020  
6.2

SHEET NO.  
**6.2**

FILE: Z:\Jobs\9900\Waters\Bases Map\Kallas Falls Base Phase 1.dwg





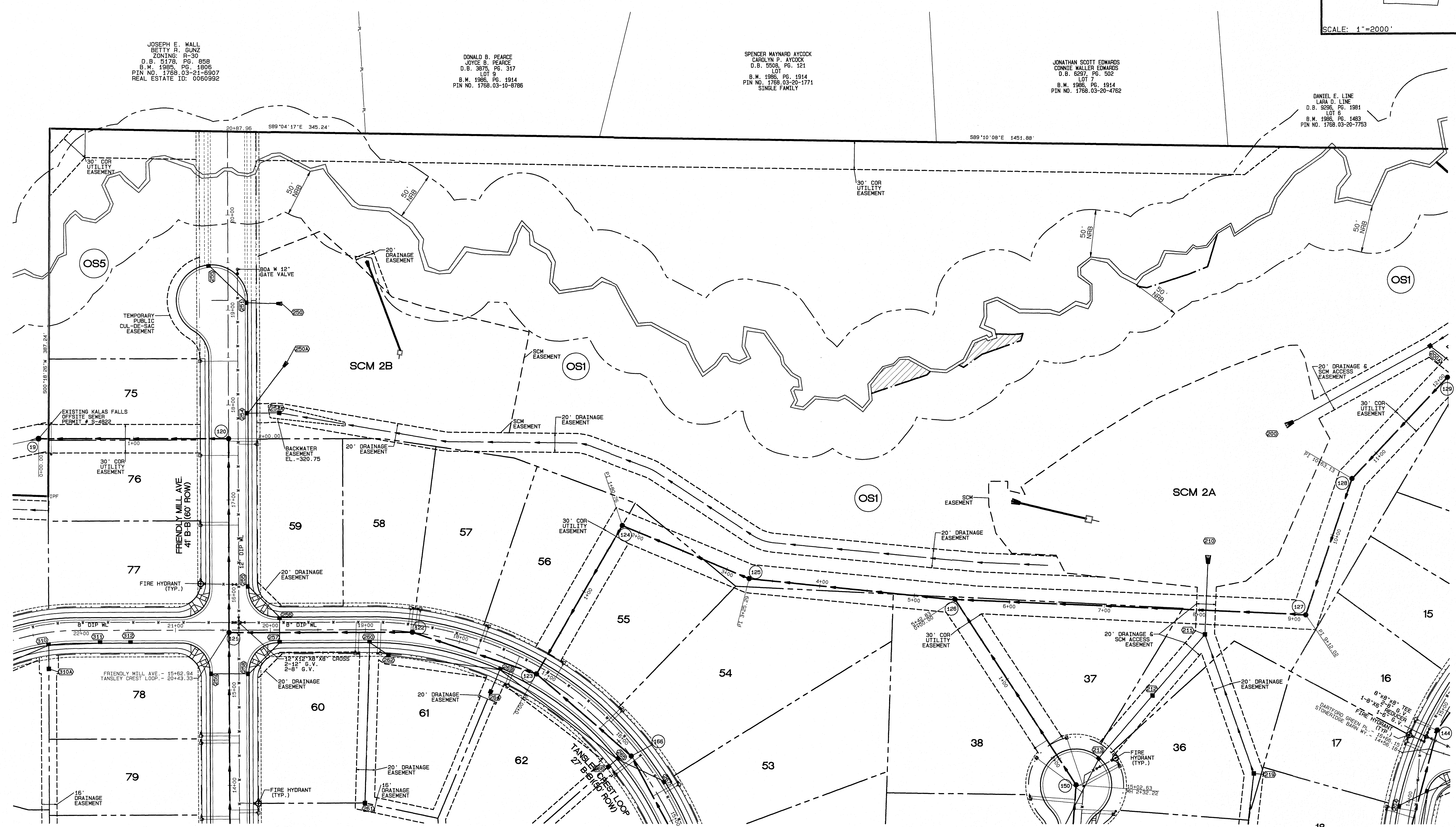
JOSEPH E. WALL  
BETTY R. GUNZ  
ZONING: R-30  
D.B. 5178, PG. 858  
B.M. 1995, PG. 1008  
PIN NO. 1788.03-51-8907  
REAL ESTATE ID: 0060992

DONALD B. PEARCE  
JOYCE B. PEARCE  
D.B. 3875, PG. 317  
LOT 9  
B.M. 1986, PG. 1914  
PIN NO. 1788.03-10-8786

SPENCER MAYNARD AYCOCK  
CAROLYN P. AYCOCK  
D.B. 5508, PG. 121  
LOT 5  
B.M. 1996, PG. 1914  
PIN NO. 1788.03-20-1771  
SINGLE FAMILY

JONATHAN SCOTT EDWARDS  
CONNIE WALLER EDWARDS  
D.B. 6591, PG. 502  
LOT 7  
B.M. 1986, PG. 1914  
PIN NO. 1788.03-20-4762

DANIEL E. LANE  
LARA D. LANE  
D.B. 9236, PG. 1981  
LOT 6  
R.M. 1985, PG. 1483  
PIN NO. 1788.03-20-7753



No.	DATE	REVISION
1	05-15-21	PLAN REVISIONS PER TOR CONSULTANT REVIEW
2	06-15-21	FINAL SET

**UTILITY PLAN  
PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 9/19/2019

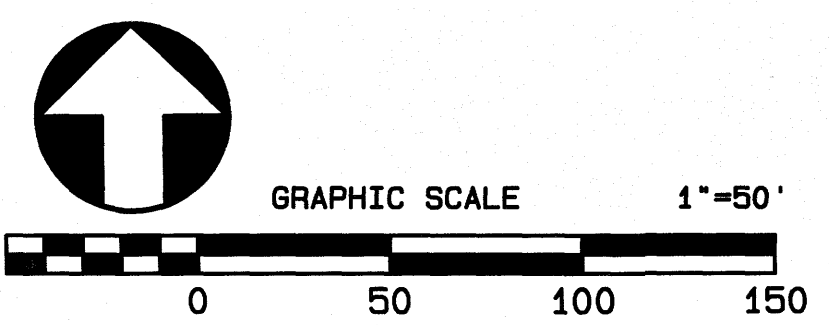
**AMERICAN**  
Engineering  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

PROPOSED LINETYPE LEGEND

EXISTING LINETYPE LEGEND

UTILITY LEGEND

- |       |                              |       |                          |   |                                  |
|-------|------------------------------|-------|--------------------------|---|----------------------------------|
| ----- | PROPOSED BUILDING SETBACK    | ----- | PROPERTY BOUNDARY        | ● | PROPOSED MANHOLE OR JUNCTION BOX |
| ----- | PROPOSED EASEMENT            | ----- | EXISTING SANITARY SEWER  | ● | PROPOSED SEWER SERVICE           |
| ----- | PROPOSED 3' / 5' CORUE       | ----- | EXISTING WETLAND         | ■ | PROPOSED CATCH BASIN             |
| ----- | PROPOSED RIGHT OF WAY        | ----- | EXISTING 50' NRB         | ■ | PROPOSED YARD INLET              |
| ----- | PROPOSED ROAD CL             | ----- | CENTERLINE OF STREAM     | ○ | PROPOSED FLARED END SECTION      |
| ----- | PROPOSED 30" CURB AND GUTTER | ----- | EXISTING WATER ELEVATION | ○ | PROPOSED FIRE HYDRANT            |
| ----- | PROPOSED SANITARY SEWER      | ----- | EXISTING RIGHT OF WAY    | □ | PROPOSED WATER SERVICE           |
| ----- | PROPOSED WATERLINE           | ----- |                          | □ | PROPOSED WATER VALVE             |
| ----- | PROPOSED STORM DRAINAGE      | ----- |                          | △ | PROPOSED WATERMAIN REDUCER       |
| ----- | PROPOSED DRAINAGE DITCH      |       |                          |   |                                  |



The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # S-4824.

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # W-3784.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be relied upon if any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer

Plot Date: 16/14/2024 Time: 8:08AM

SEAL  
9810  
ENGINEER  
JOHN R. HARMAN

SHEET NO.  
**6.3**



**PROPOSED LINETYPE LEGEND**

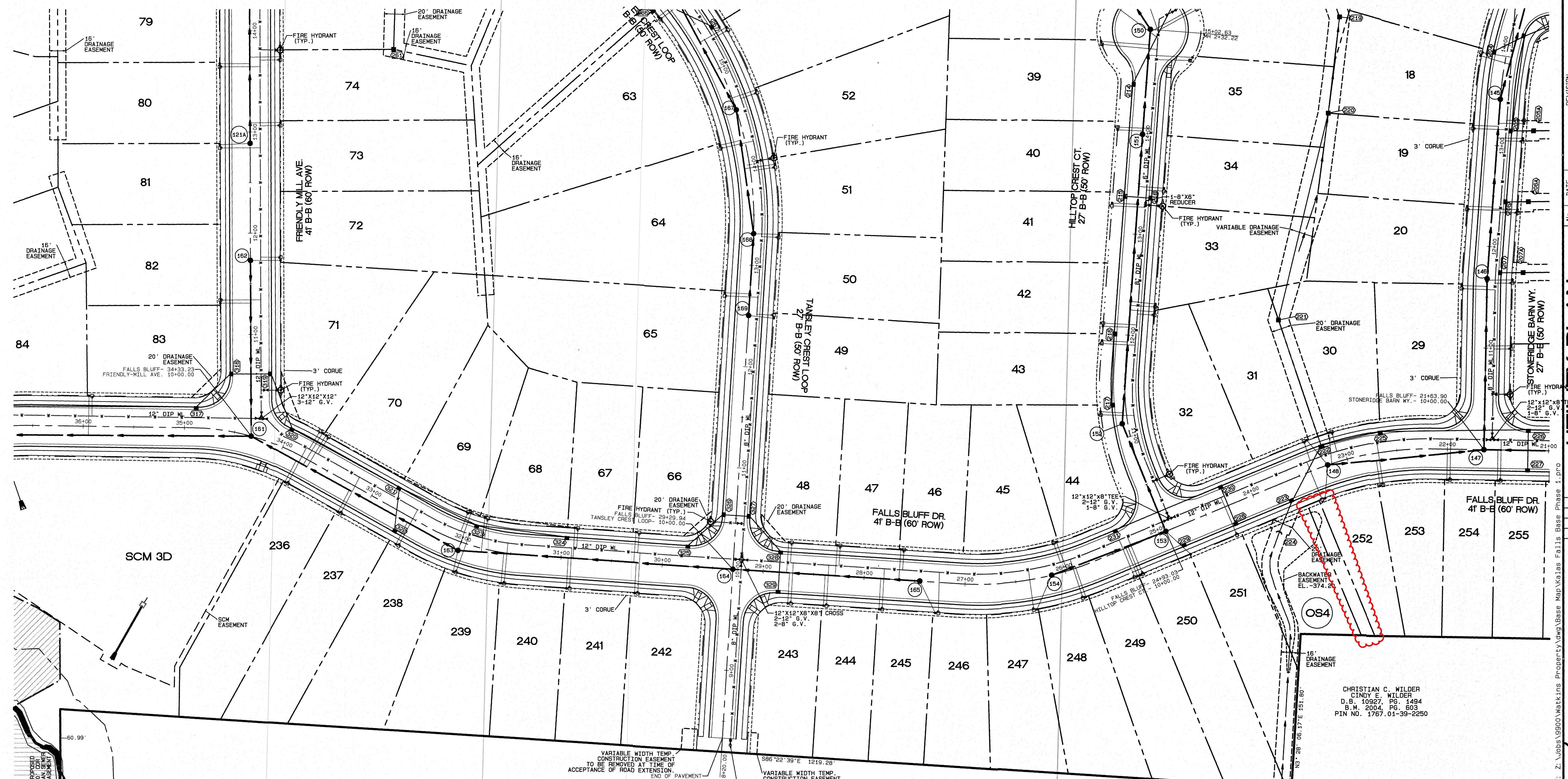
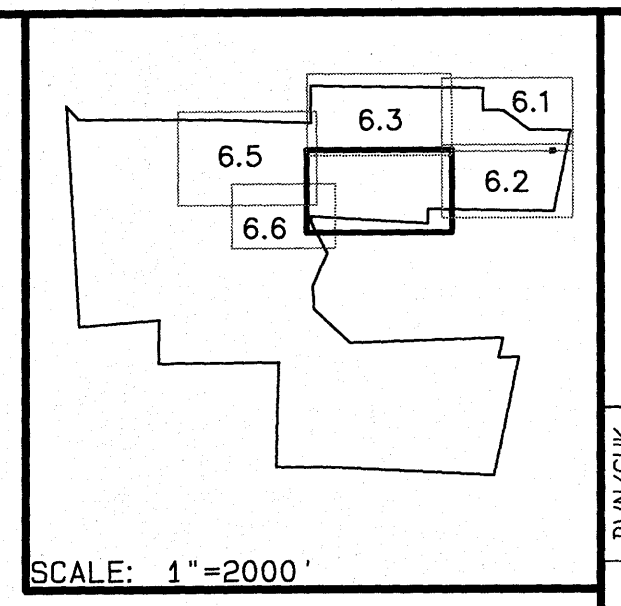
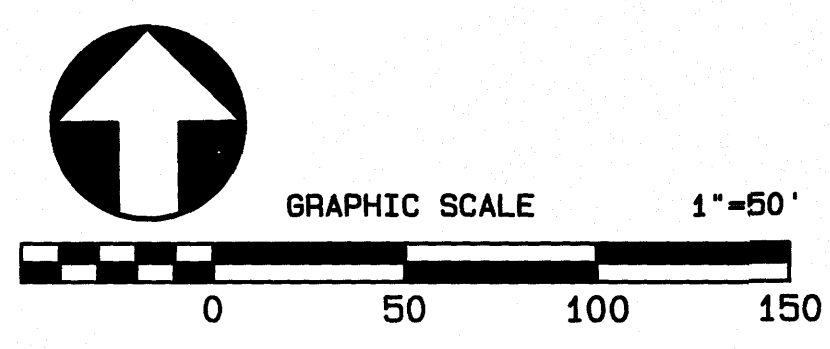
- PROPOSED PHASE-LINE
- - - - PROPOSED BUILDING SETBACK
- - - - PROPOSED EASEMENT
- - - - PROPOSED 3'/5' CORUE
- - - - PROPOSED RIGHT OF WAY
- - - - PROPOSED ROAD CL
- - - - PROPOSED 30" CURB AND GUTTER
- - - - PROPOSED SANITARY SEWER
- - - - PROPOSED WATERLINE
- - - - PROPOSED STORM DRAINAGE
- - - - PROPOSED DRAINAGE DITCH

**EXISTING LINETYPE LEGEND**

- EXISTING SANITARY SEWER
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**UTILITY LEGEND**

- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED SEWER SERVICE
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- PROPOSED FLARED END SECTION
- PROPOSED FIRE HYDRANT
- PROPOSED WATER SERVICE
- PROPOSED WATER VALVE
- △ PROPOSED WATERMAIN REDUCER



WC HOLLINGSWORTH JR  
LAURA W HOLLINGSWORTH  
ZONING: R-30  
PIN NO. 1767 01-28-4925  
REAL ESTATE ID: 0048383  
VACANT

WC HOLLINGSWORTH JR  
LAURA W HOLLINGSWORTH  
ZONING: R-30  
PIN NO. 1767 01-28-4925  
REAL ESTATE ID: 0048383  
VACANT

CHRISTIAN C. WILDER  
CINDY E. WILDER  
D.B. 10927, PG. 1494  
B.W. 2004, PG. 603  
PIN NO. 1767 01-39-2250

VARIABLE WIDTH TEMP. CONSTRUCTION EASEMENT TO BE REMOVED AT TIME OF ACCEPTANCE OF ROAD EXTENSION.  
END OF PAVEMENT STATION: 8433.77  
BOA W 8' GATE VALVE

VARIABLE WIDTH TEMP. CONSTRUCTION EASEMENT TO BE REMOVED AT TIME OF ACCEPTANCE OF ROAD EXTENSION.  
S86°22'39"E 1219.28'

DATE	REVISION
08-13-21	PLAN REVISIONS PER UIC CONSULTANT REVIEW.
08-14-21	FINAL SET
12-13-21	LOT AREA CHANGES TO OSL, OSL4, LOTS 10, 11, AND 252

**UTILITY PLAN PHASE 1**

FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-9881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 9/19/2019

**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4820 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

Professional Engineer Seal: JOHN R. HARMON, No. 9810, State of North Carolina

12.17.23

SHEET NO. **6.4**

FILE: Z:\Jobs\9900\Matt\Ins Property\dwg\Base Map\Kalas Falls Base Phase 1.prc  
Time: 4:41AM  
Plot Date: 12/13/2023



**PROPOSED LINETYPE LEGEND**

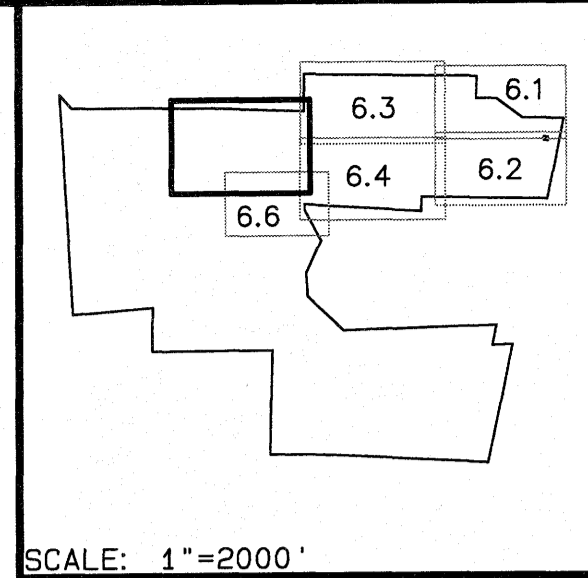
- PROPOSED PHASE-LINE
- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3' / 5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED SANITARY SEWER
- PROPOSED WATERLINE
- PROPOSED STORM DRAINAGE
- PROPOSED DRAINAGE DITCH

**EXISTING LINETYPE LEGEND**

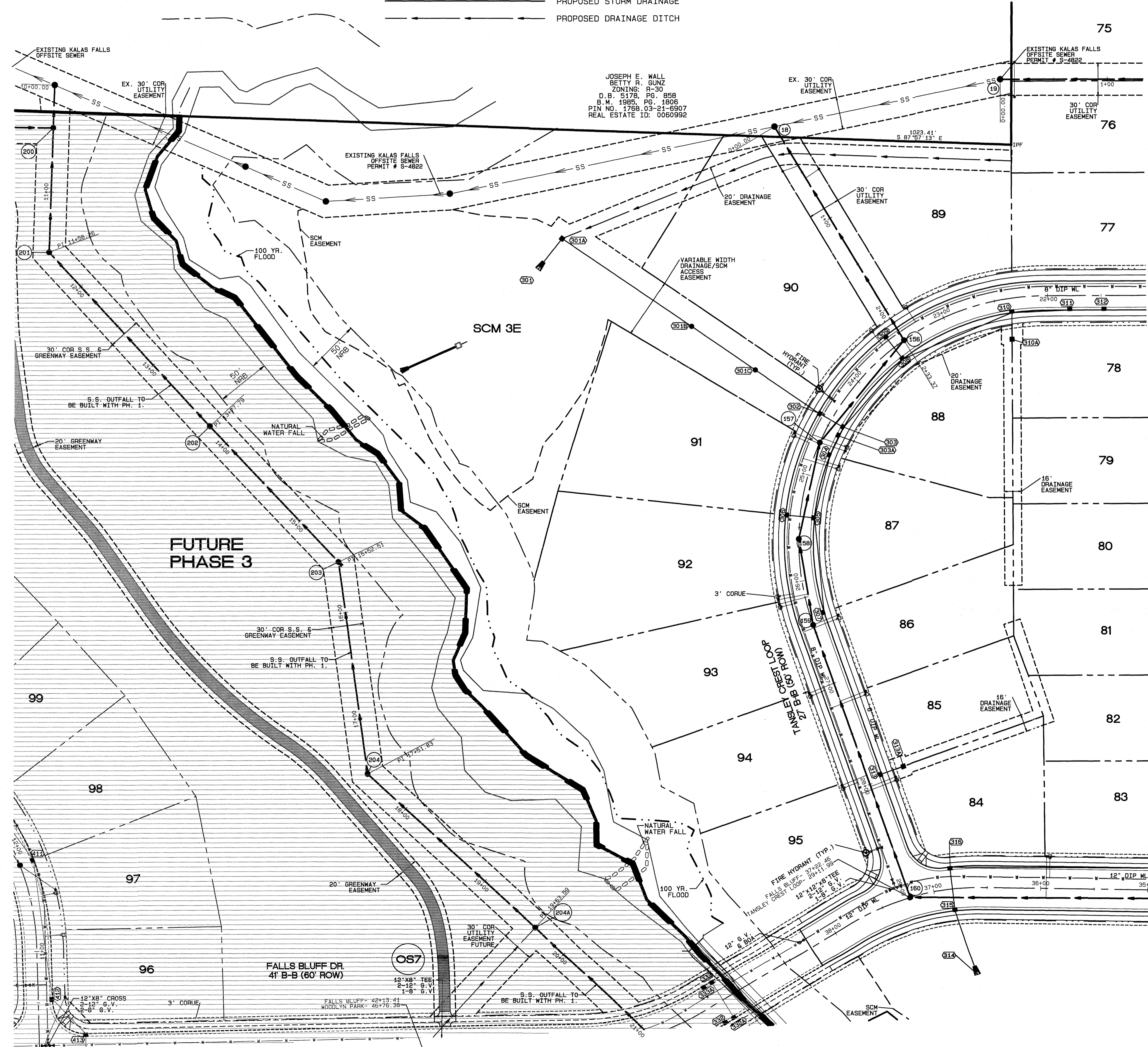
- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

**UTILITY LEGEND**

- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED SEWER SERVICE
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- ◻ PROPOSED FLARED END SECTION
- ◻ PROPOSED FIRE HYDRANT
- ◻ PROPOSED WATER SERVICE
- ◻ PROPOSED WATER VALVE
- ◻ PROPOSED WATERMAIN REDUCER



SCALE: 1"=2000'



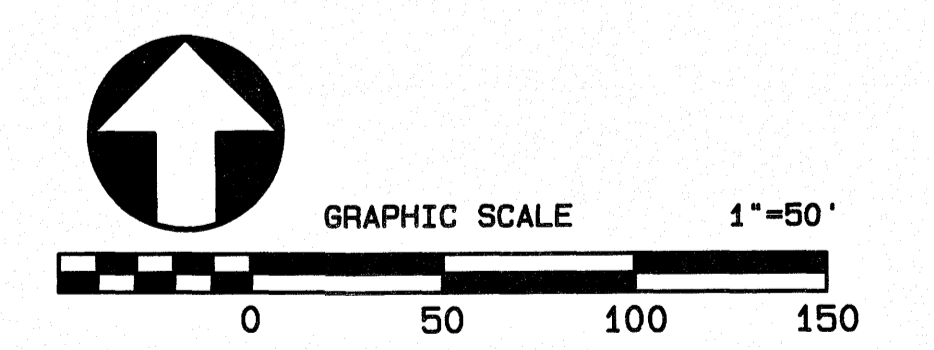
JOSEPH E. WALL  
BETTY R. GUNZ  
ZONING: R-30  
D.B. 5178, PG. 888  
R.W. 1985, PG. 1806  
P.L.N. NO. 1768.03-21-6907  
REAL ESTATE ID: 0060992

NO.	DATE	REVISION
1	08-13-21	PLAN REVISIONS PER TOR CONSULTANT REVIEW.
2	08-14-21	FINAL SET

**UTILITY PLAN  
PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 9/19/2019

**GENERAL NOTE:**  
1. NO DRAINAGE IN THE PHASE 3 AREA WHICH INCLUDES THE CULVERT CROSSING IS TO BE CONSTRUCTED WITH PHASE 1.  
2. NO ADDITIONAL UTILITY EXTENSIONS IN THE PHASE 3 AREA ARE INCLUDED WITH THIS PHASE. THE ONLY UTILITY EXTENSION IN THE PHASE 3 AREA TO BE CONSTRUCTED WITH PHASE 1 IS MH200-MH206.



The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **S-4824**.

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3784**.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval  
Raleigh Water Review Officer

**AMERICAN**  
Engineering  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

6.14.21  
SEAL 9810  
ENGINEER  
JOHN R. HAWMAN  
SHEET NO.  
**6.5**

FILE: Z:\utils\9900\Watkins Property\dwg\Base Map\Karas Falls Base Phase 1.pcd



PROPOSED LINETYPE LEGEND

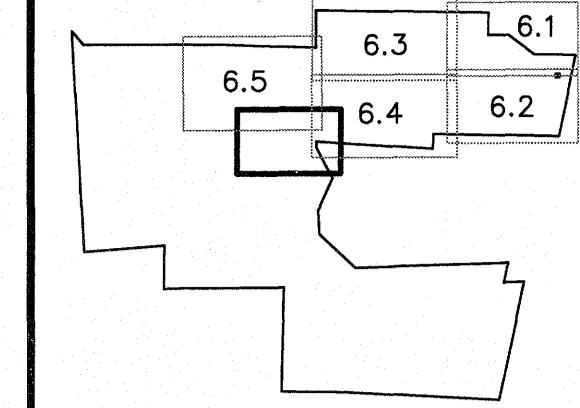
- PROPOSED BUILDING SETBACK
- PROPOSED EASEMENT
- PROPOSED 3'/5' CORUE
- PROPOSED RIGHT OF WAY
- PROPOSED ROAD CL
- PROPOSED 30" CURB AND GUTTER
- PROPOSED SANITARY SEWER
- PROPOSED WATERLINE

EXISTING LINETYPE LEGEND

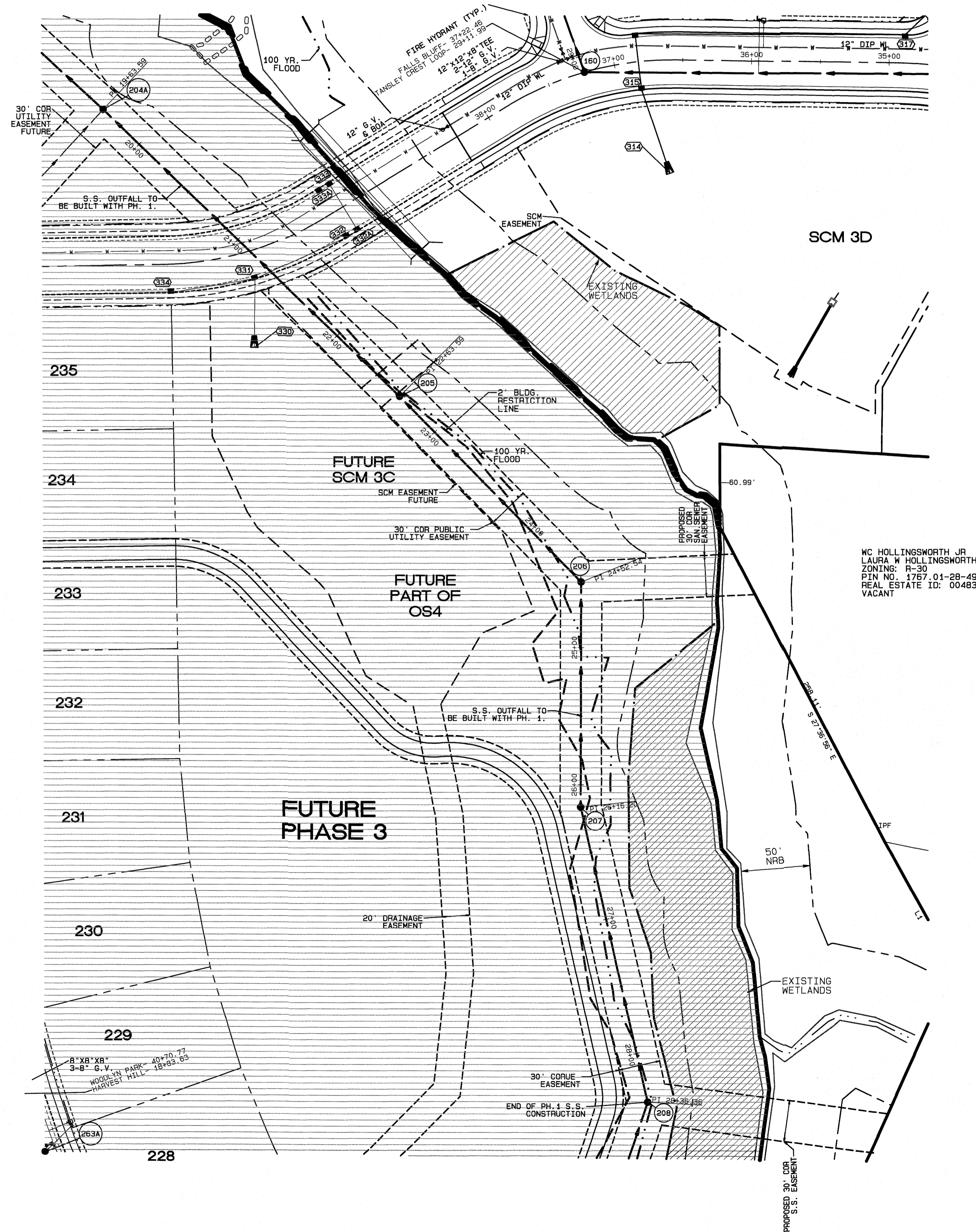
- PROPERTY BOUNDARY
- EXISTING TREE LINE
- EXISTING WETLAND
- EXISTING 50' NRB
- CENTERLINE OF STREAM
- EXISTING WATER ELEVATION
- EXISTING RIGHT OF WAY

UTILITY LEGEND

- PROPOSED MANHOLE OR JUNCTION BOX
- PROPOSED SEWER SERVICE
- PROPOSED CATCH BASIN
- PROPOSED YARD INLET
- ▭ PROPOSED FLARED END SECTION
- PROPOSED FIRE HYDRANT
- PROPOSED WATER SERVICE
- △ PROPOSED WATER VALVE



SCALE: 1"=2000'



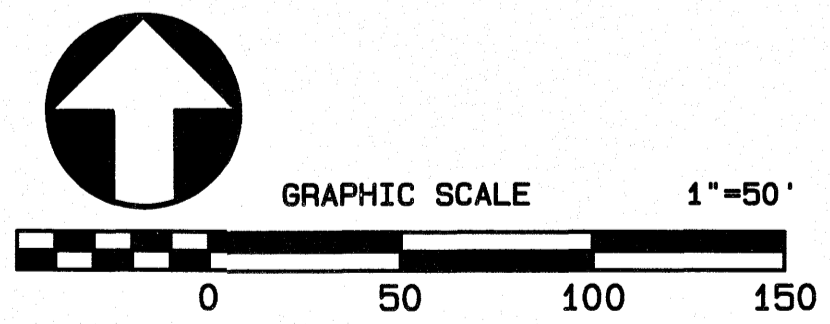
NC HOLLINGSWORTH JR  
LAURA W HOLLINGSWORTH  
ZONING: R-30  
PIN NO. 1767.01-28-4925  
REAL ESTATE ID: 0048383  
VACANT

No.	DATE	REVISION
1	05-13-21	PLAN REVISIONS PER TOR CONSULTANT REVIEW.
2	09-14-21	PANEL SET

**UTILITY PLAN  
PHASE 1**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 9/19/2019

- GENERAL NOTE:
- NO DRAINAGE IN THE PHASE 3 AREA WHICH INCLUDES THE CULVERT CROSSING IS TO BE CONSTRUCTED WITH PHASE 1.
  - NO ADDITIONAL UTILITY EXTENSIONS IN THE PHASE 3 AREA ARE INCLUDED WITH THIS PHASE. THE ONLY UTILITY EXTENSION IN THE PHASE 3 AREA TO BE CONSTRUCTED WITH PHASE 1 IS MH200-MH206.



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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer

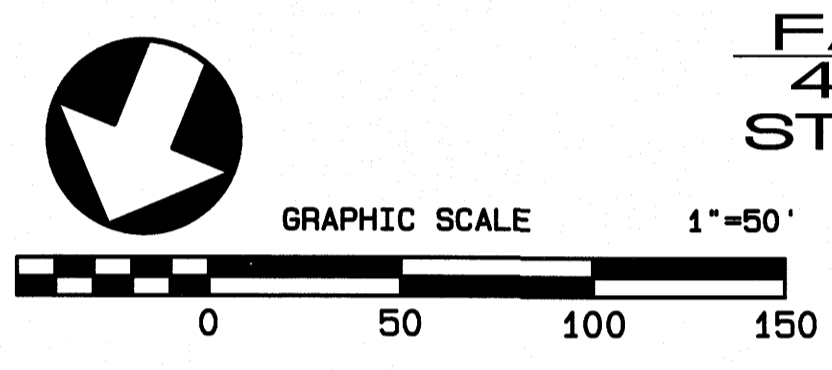
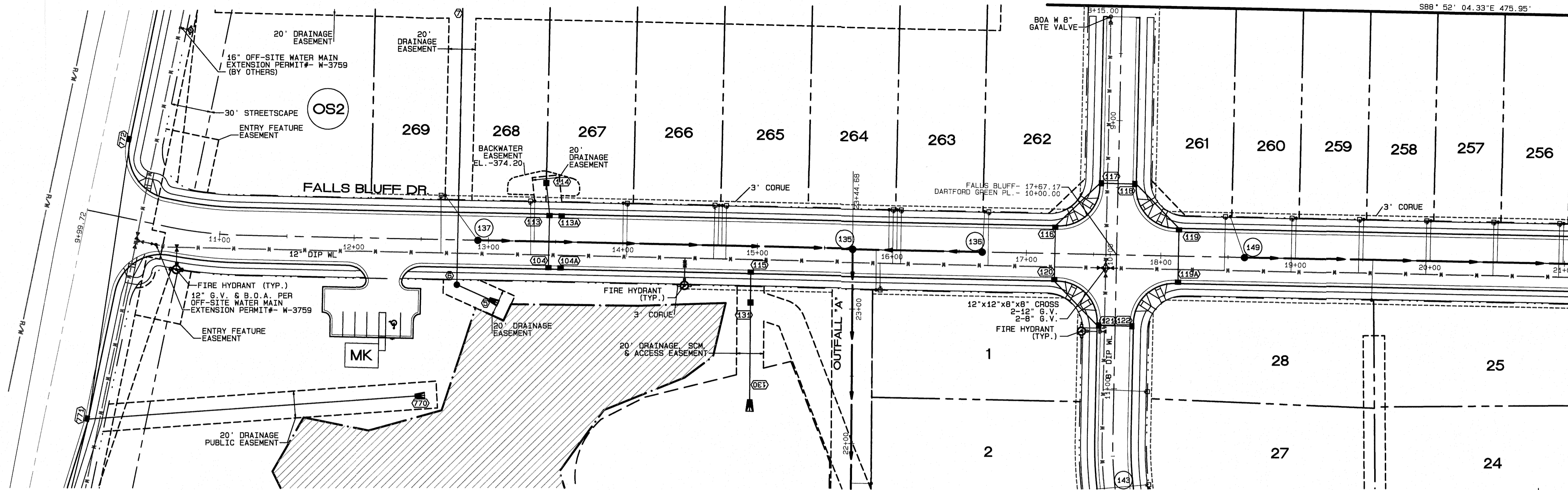
**AMERICAN**  
Engineering  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

6.14.21

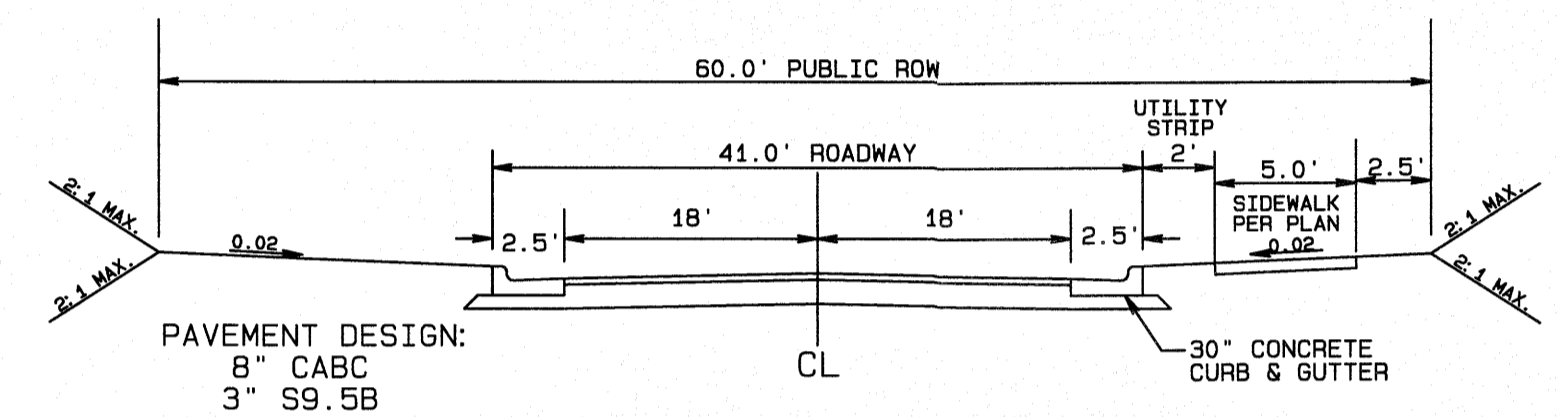
SHEET NO.  
**6.6**

P:\lot Date: 6/14/2021 Time: 8:22AM FILE: Z:\Jobs\9800\WatkIns Property\dwg\Map\Kalas Falls Base Phase 1.dwg





**FALLS BLUFF DR.**  
 41' B-B (60' ROW)  
 STA. 9+99.72-20+50

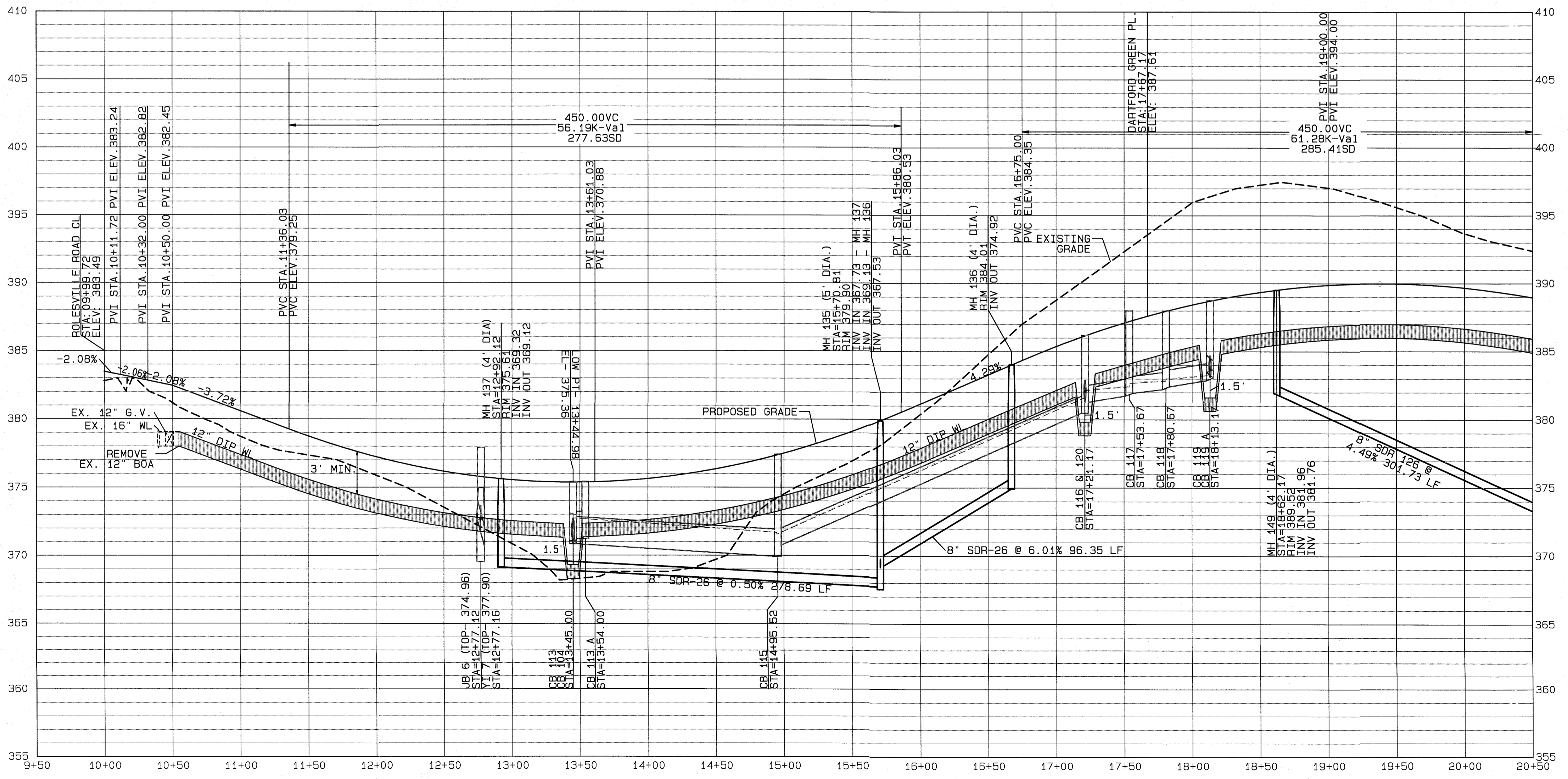


PAVEMENT DESIGN:  
 8" CABG  
 3" S9.5B

NOTE:  
 1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.  
 2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5" LIFTS.

TYPICAL SECTION

GENERAL NOTE:  
 1. ALL SANITARY SEWER PIPE GREATER THAN 12" DEPTH IS TO BE SDR 26 WITH #57 STONE FOR THE FIRST FOOT OF BACKFILL ABOVE THE PIPE CROWN UNLESS OTHERWISE NOTED.  
 2. AT THE START OF CONSTRUCTION THE CONTRACTOR WILL NEED TO FIELD LOCATE/VERIFY THE LOCATION OF THE EXISTING 12" G.V. AND BLOWOFF ASSEMBLY.



NO.	DATE	REVISION
1	02-15-20	ADDRESSING COR. JUST REVIEW COMMENTS.
2	02-15-20	ADDRESSING FOR CONSULTANT COMMENTS.

**FALLS BLUFF DRIVE**  
**PLAN AND PROFILE**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # S-4824.

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Official below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

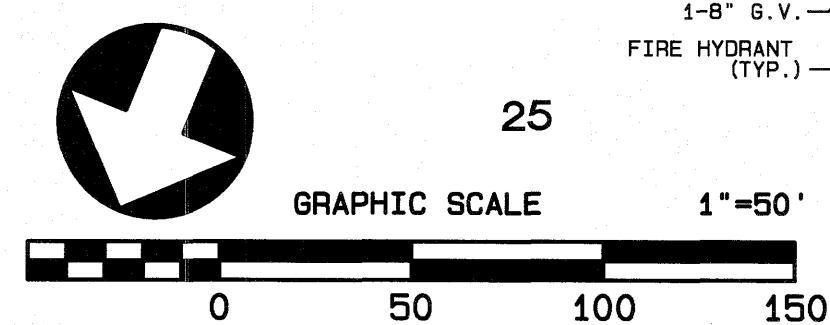
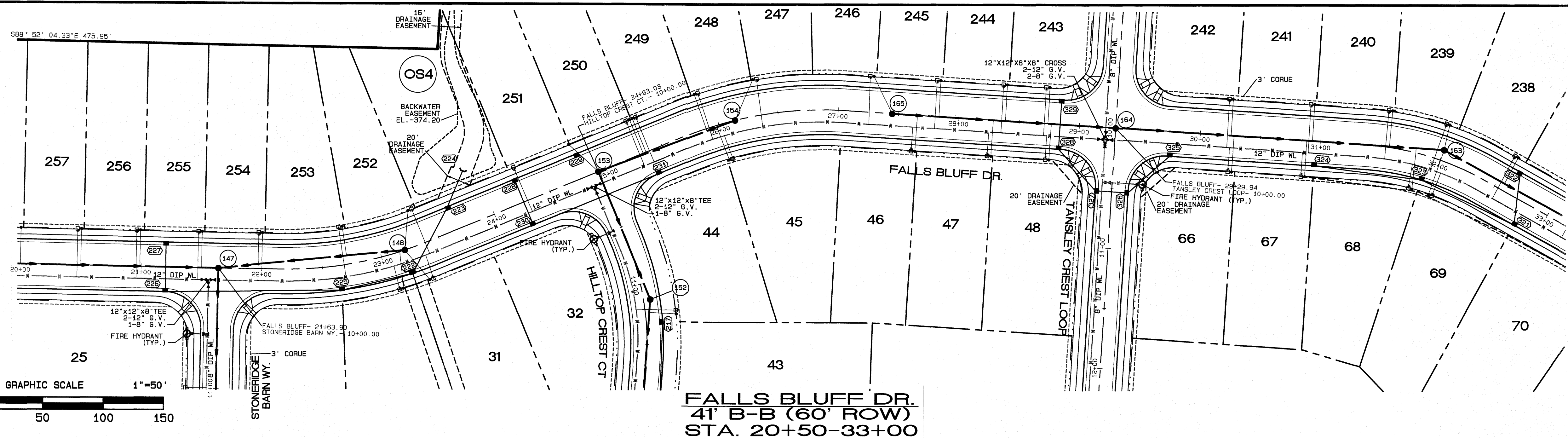
City of Raleigh Development Approval

Raleigh Water Review Officer

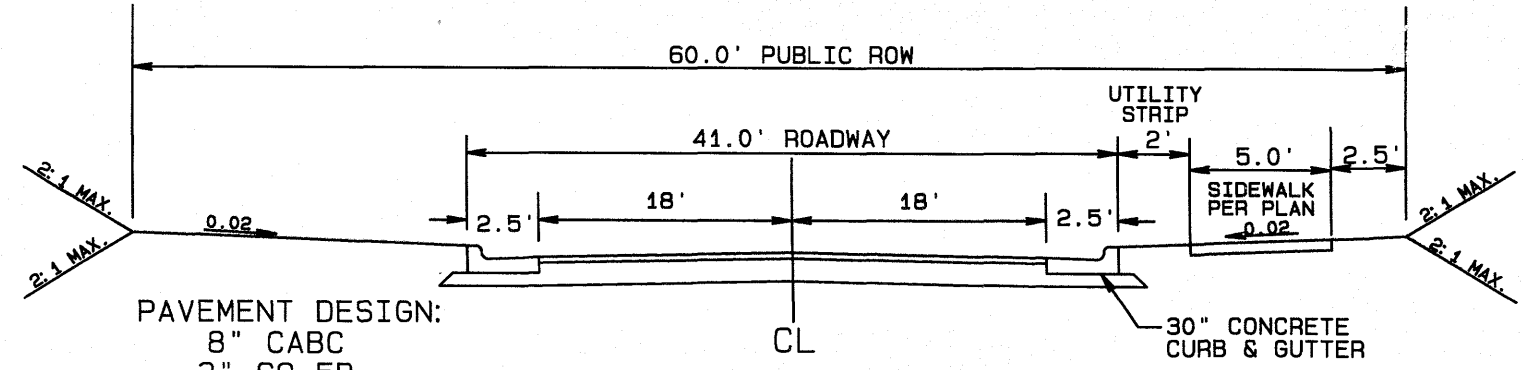
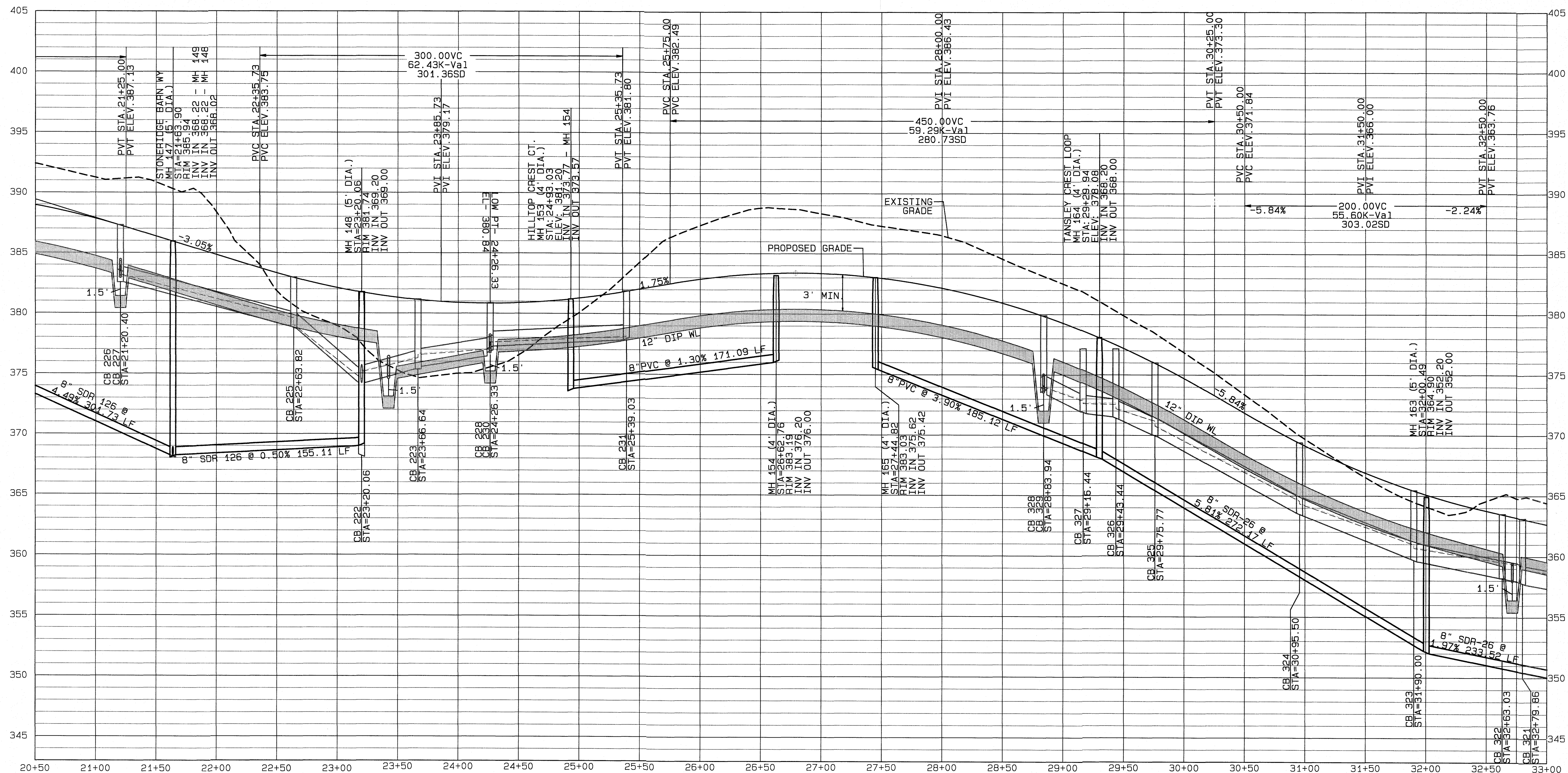
SEAL 9810  
 APR 24 2020  
 J. R. HARRIS  
 SHEET NO. 7.0

FILE: Z:\Jobs\9900\Watkins Property\dwg\Base Map\Kalas Falls Base Phase 1.dwg Plot Date: 6/14/2021 Time: 8:26AM





**FALLS BLUFF DR.**  
**4' B-B (60' ROW)**  
**STA. 20+50-33+00**



**GENERAL NOTE:**  
 1. ALL SANITARY SEWER PIPE GREATER THAN 12" DEPTH IS TO BE SDR 26 WITH #67 STONE FOR THE FIRST FOOT OF BACKFILL ABOVE THE PIPE CROWN UNLESS OTHERWISE NOTED.

**PAVEMENT DESIGN:**  
 8" CABC  
 3" S9.5B

**NOTE:**  
 1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.  
 2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5" LIFTS.

**TYPICAL SECTION**

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # S-4824.

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # W-3784.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Engineer-Official below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be relied upon if any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer \_\_\_\_\_

No.	DATE	REVISION
1	02-11-20	ADDRESSING COR. 1ST REVIEW COMMENTS
2	05-14-21	ADDRESSING COR. 1ST CONSULTANT COMMENTS
3	05-14-21	FINAL SET

**FALLS BLUFF DRIVE**  
**PLAN AND PROFILE**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

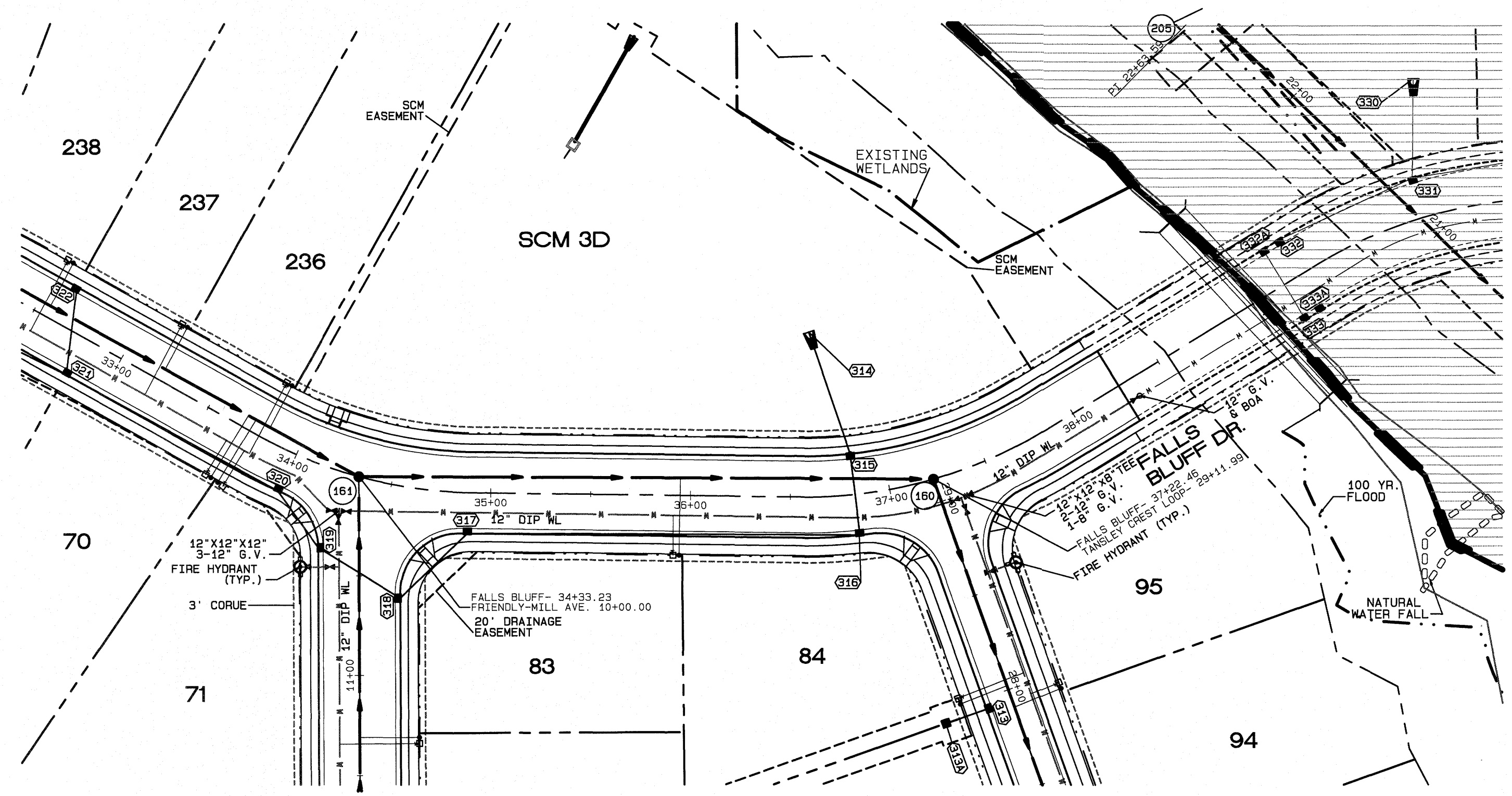
**AMERICAN**  
**Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

Plot Date: 6/7/2021  
 Time: 6:59AM  
 FILE: Z:\Jobs\9900\watkins Property\dwg\Base Map\Kalas Falls Base Phase 1.prd

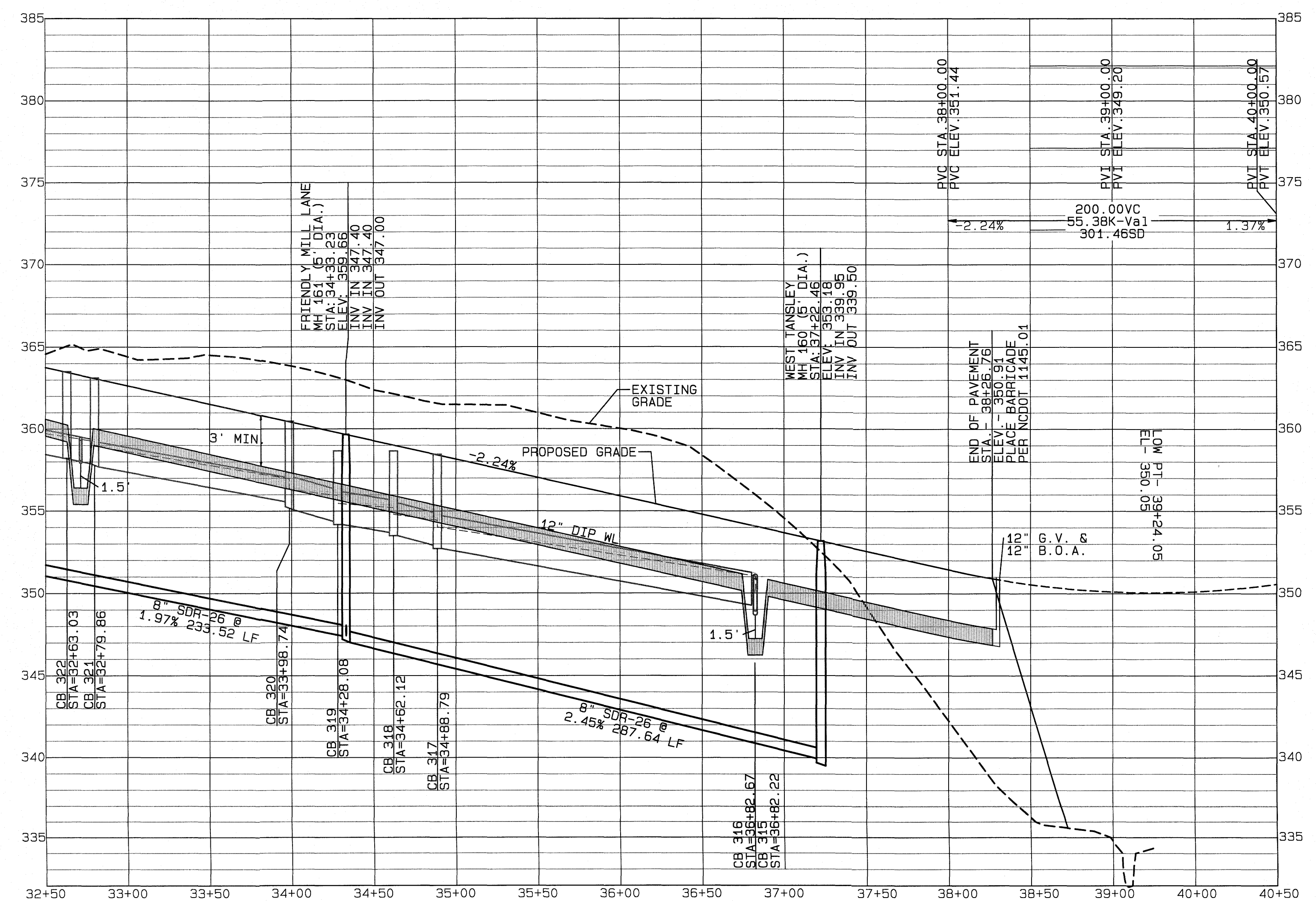
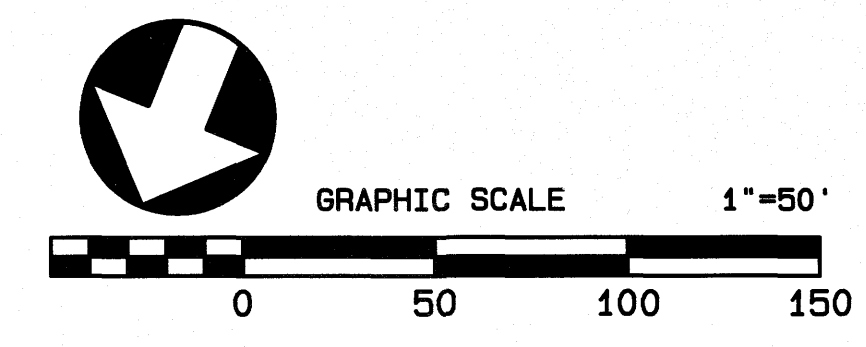
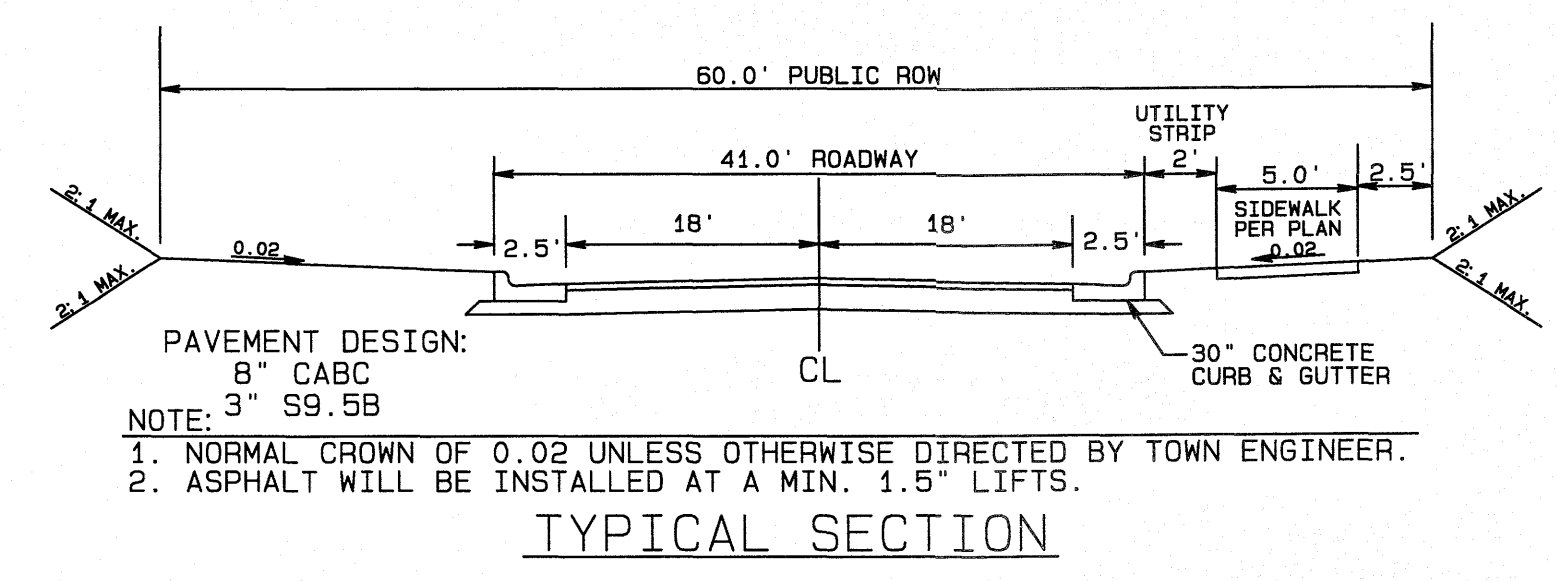
SEAL 9810  
 ENGINEER  
 J. R. HARRIS  
 6-19-21

SHEET NO.  
**7.1**





**FALLS BLUFF DR.  
41' B-B (60' ROW)  
STA. 33+00-40+00**



**GENERAL NOTE:**  
1. ALL SANITARY SEWER PIPE GREATER THAN 12" DEPTH IS TO BE SDR 26 WITH #67 STONE FOR THE FIRST FOOT OF BACKFILL ABOVE THE PIPE CROWN UNLESS OTHERWISE NOTED.

No.	DATE	REVISION
1	12-1-20	ADDRESSING FOR 1ST PAYMENT COMMENTS
2	05-10-21	ADDRESSING FOR CONSULTANT COMMENTS
3	05-14-21	FINAL SET

**FALLS BLUFF DRIVE  
PLAN AND PROFILE**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # S-4824.

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

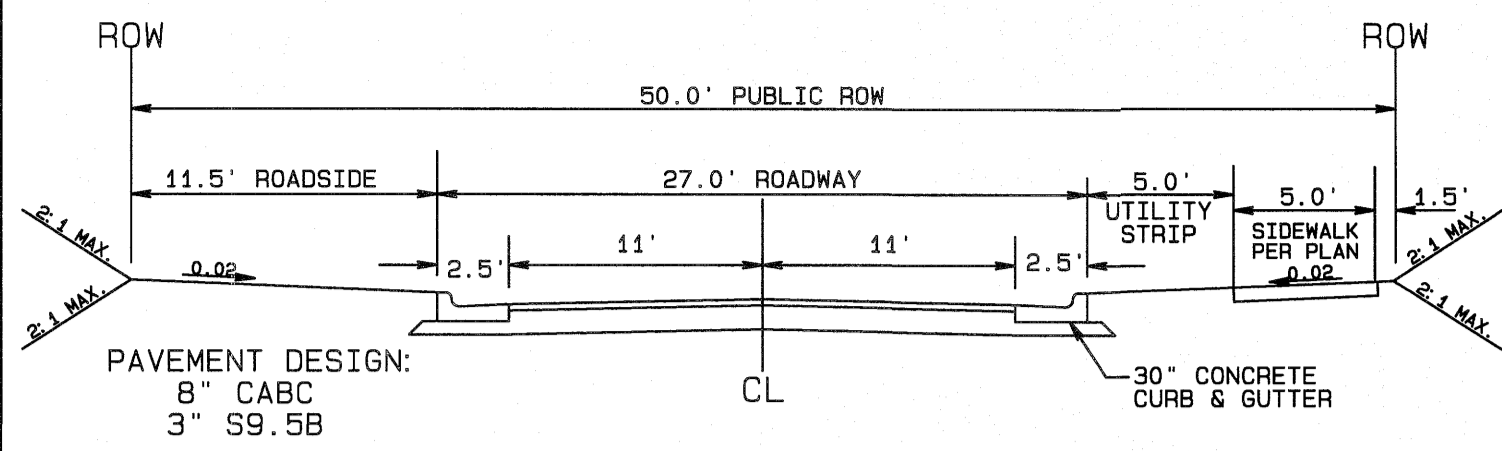
Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be signed once issued. Any modification to this approval (once issued) will invalidate this approval.

City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer \_\_\_\_\_

Professional Engineer Seal for John R. Herman, License No. 9810, dated 6-19-21.

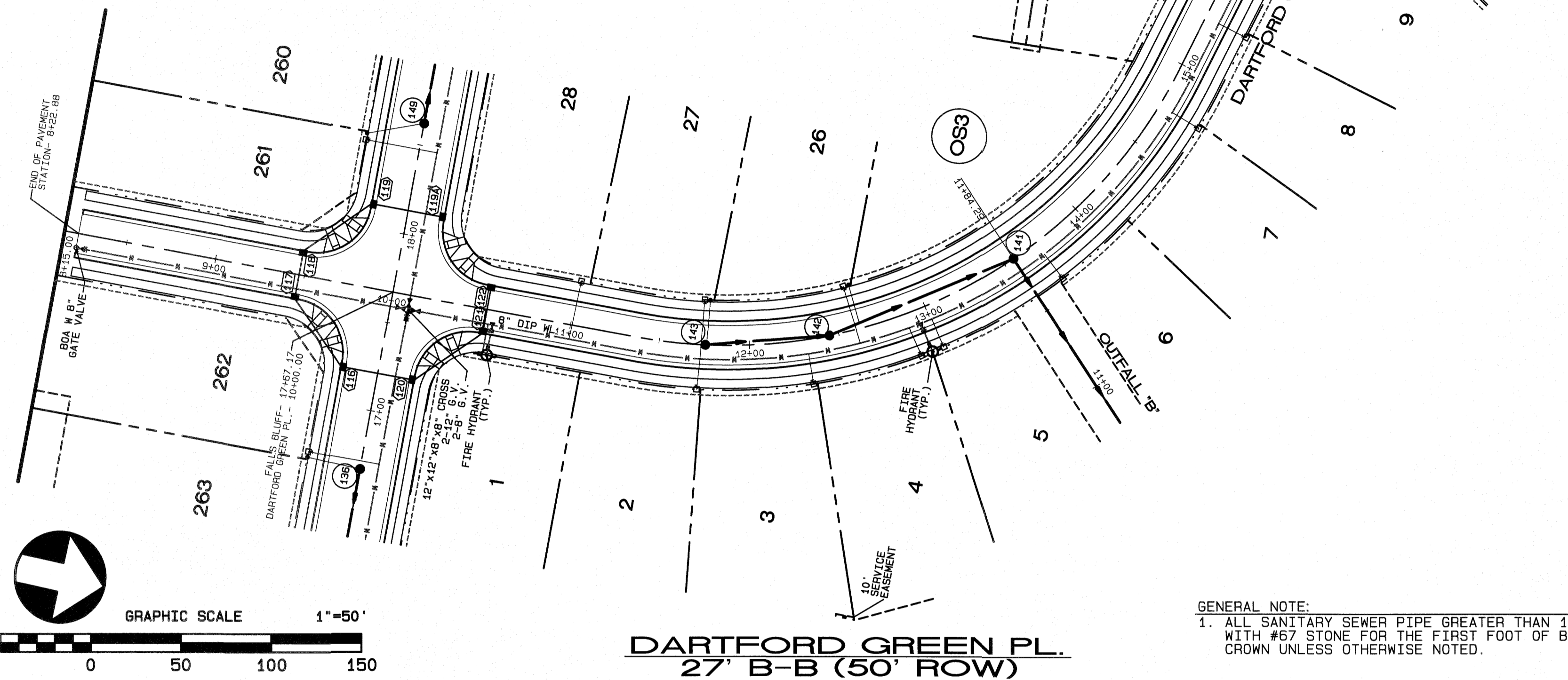
**SHEET NO.  
7.2**



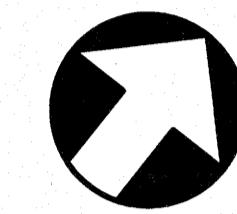
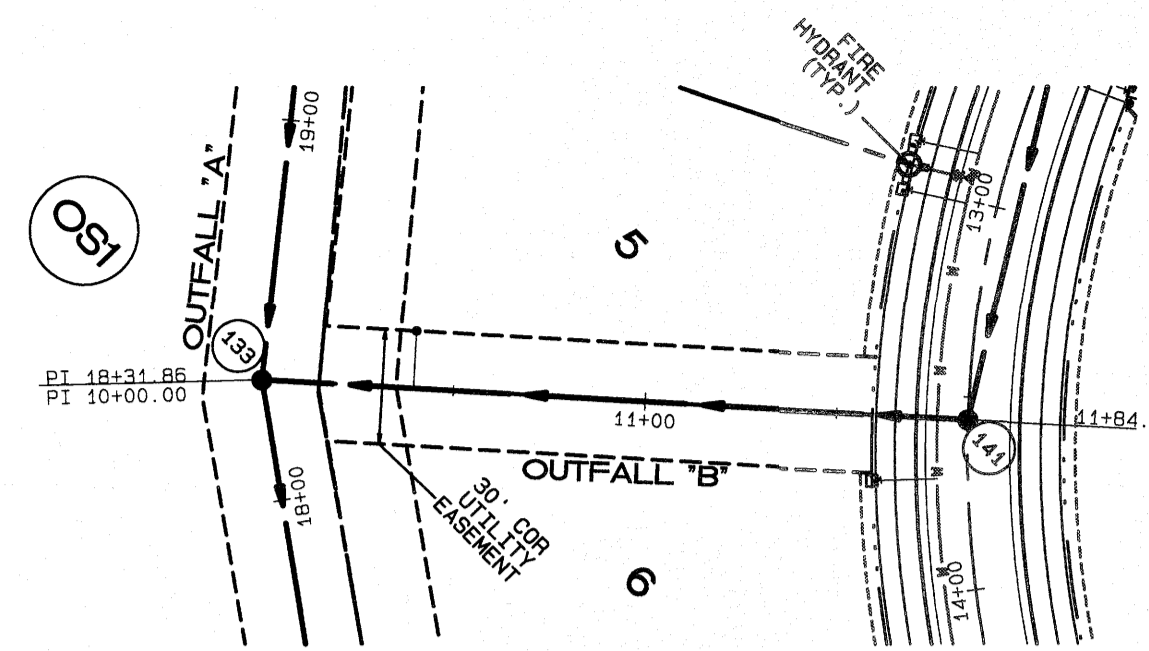


- NOTE:  
 1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.  
 2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5\"/>

TYPICAL SECTION

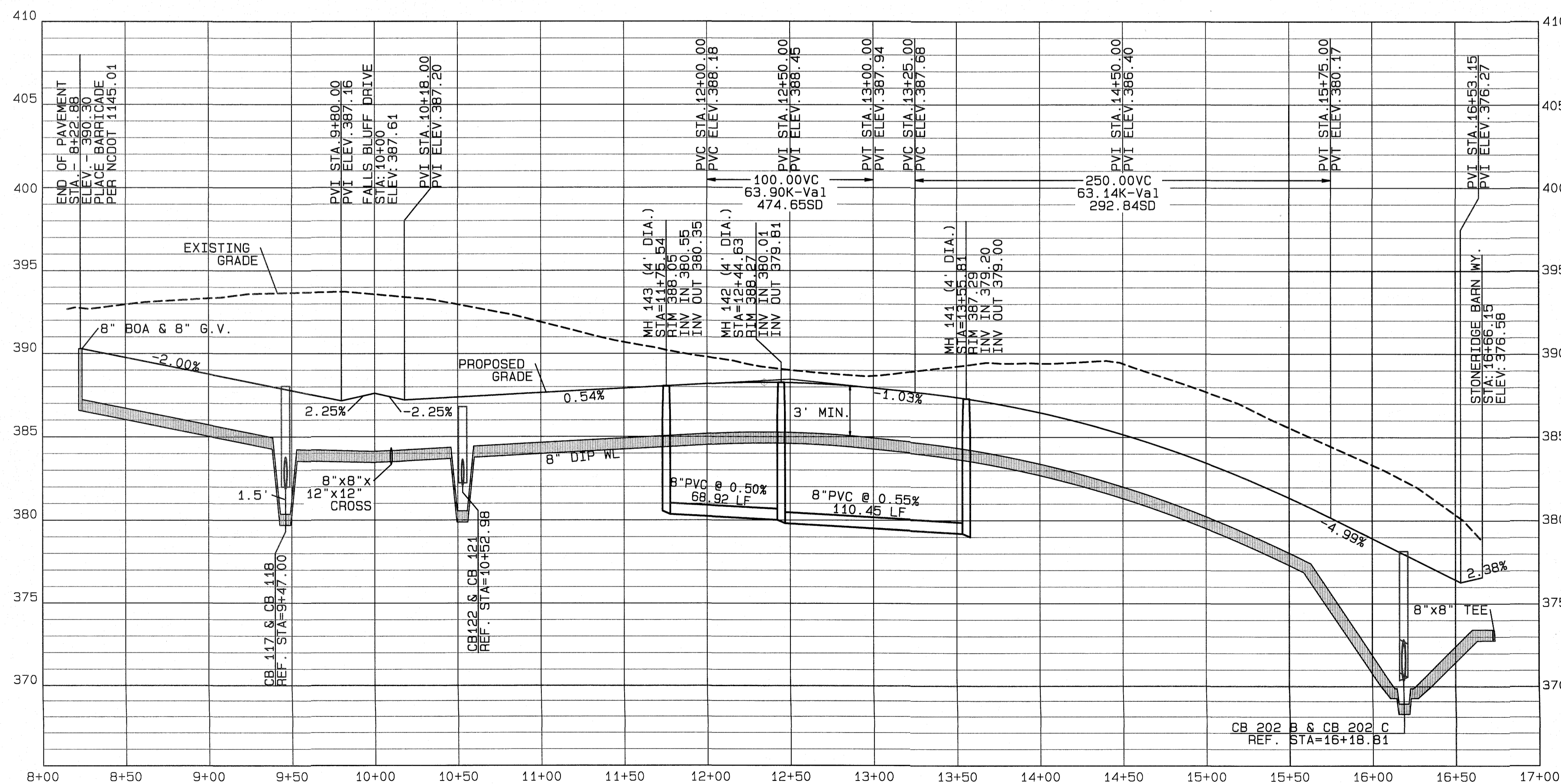
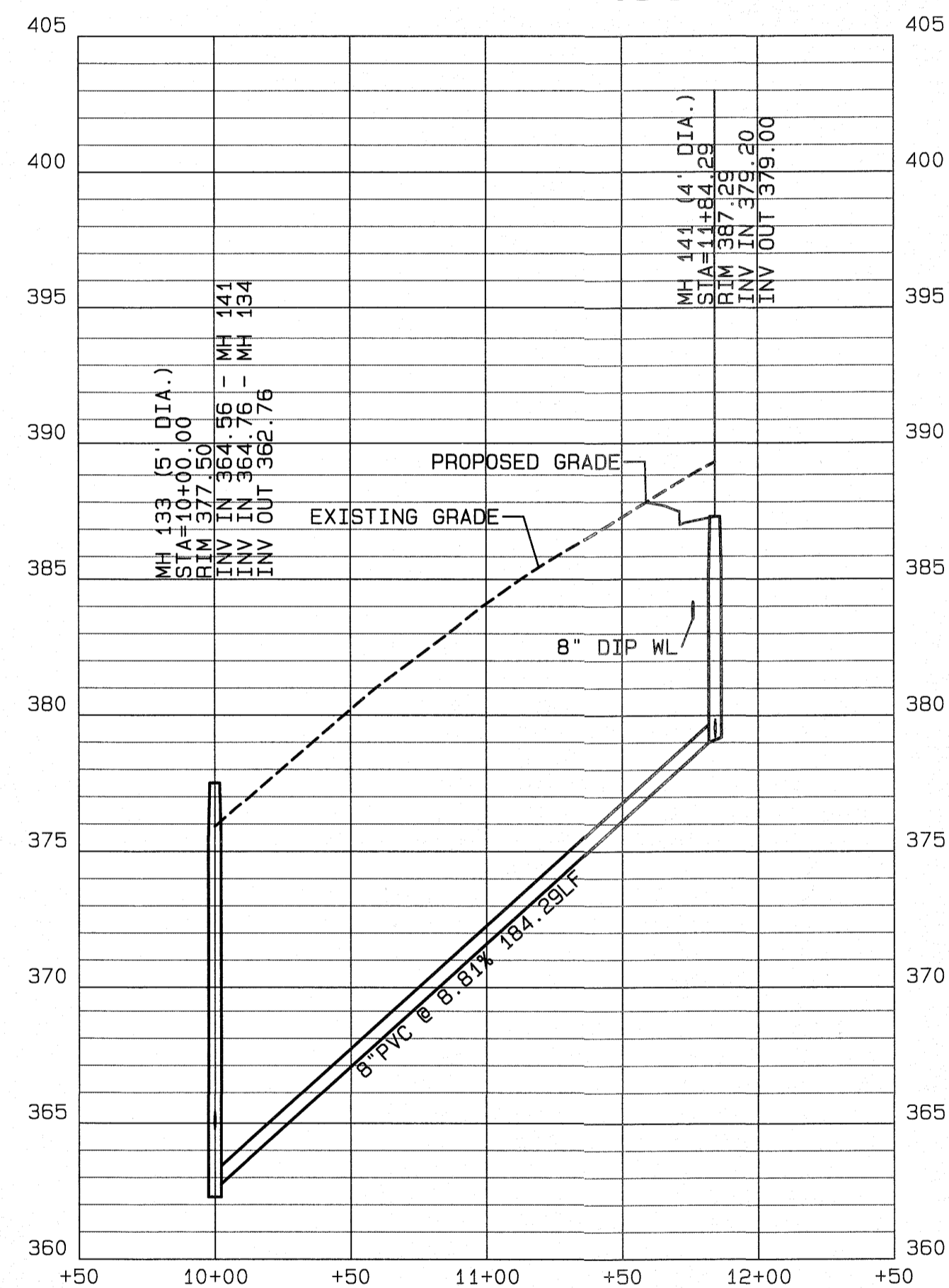


- GENERAL NOTE:  
 1. ALL SANITARY SEWER PIPE GREATER THAN 12\"/>



GRAPHIC SCALE 1"=50'

OUTFALL "B"  
 MH141 THRU 133



NO.	DATE	REVISION
1	05-15-20	ADDRESSING COR. LIST REVIEW COMMENTS.
2	05-15-20	ADDRESSING COR. LIST REVIEW COMMENTS.
3	05-14-21	FOR CONSULTANT COMMENTS.
4	05-14-21	FINAL SET

**DARTFORD GREEN PLACE AND  
 OUTFALL B PLAN AND PROFILE**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

**AMERICAN  
 Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # S-4824.

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

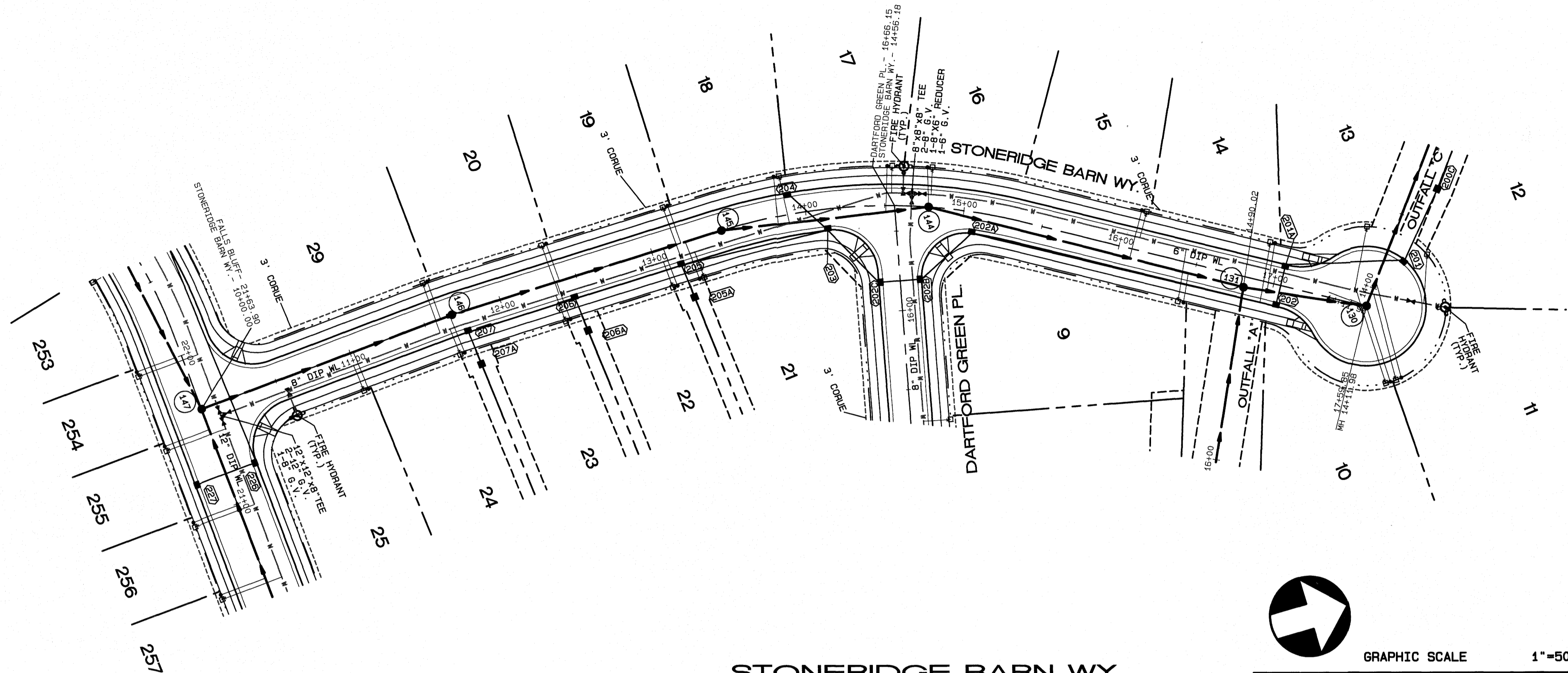
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City of Raleigh Development Approval

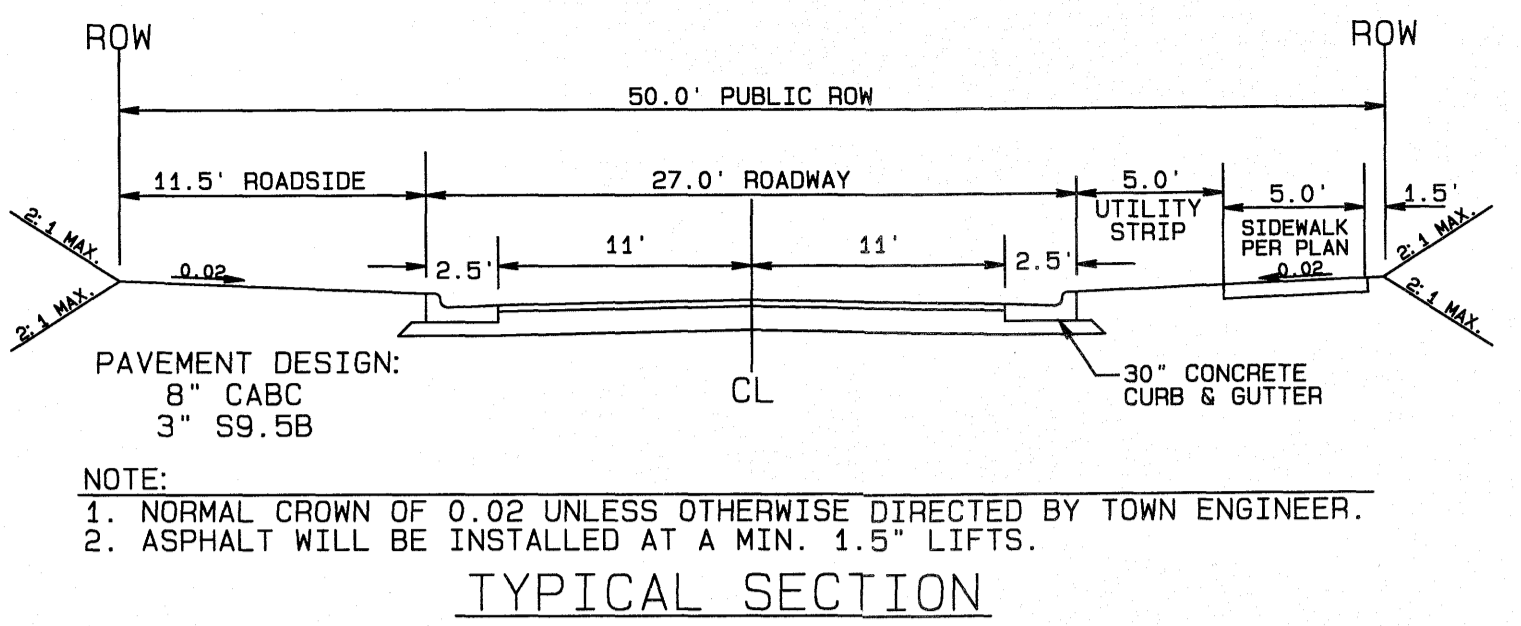
SEAL  
 9810  
 6/16/21  
 SHEET NO.  
**8.0**

FILE: Z:\Jobs\9900\Watk\ins\_Property\Umg\Bse Map\Kalas Falls Base Phase 1.dwg  
 Time: 9:22AM  
 Plot Date: 6/17/2021

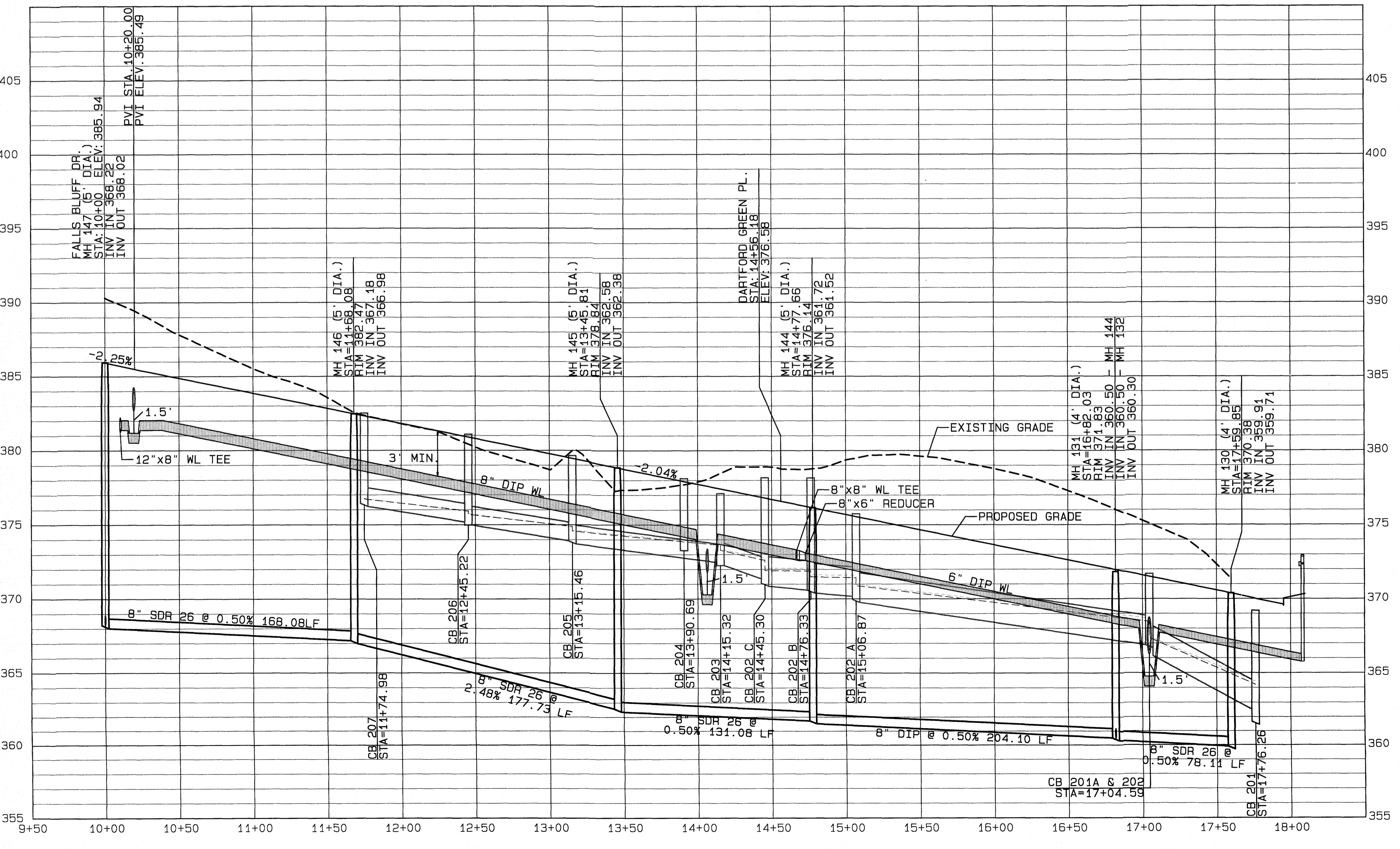




**STONERIDGE BARN WY.  
27" B-B (50' ROW)**



**NOTE:**  
 1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.  
 2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5" LIFTS.



**GENERAL NOTE:**  
 1. ALL SANITARY SEWER PIPE GREATER THAN 12" DEPTH IS TO BE SDR 26 WITH #67 STONE FOR THE FIRST FOOT OF BACKFILL ABOVE THE PIPE CROWN UNLESS OTHERWISE NOTED.

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City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer \_\_\_\_\_

FILE: Z:\vobs\9800\metkins Property\vwg\Bases Map\Kalas Falls Base Phase 1.prf  
 Time: 9:25AM  
 Date: 6/14/2021

No.	DATE	REVISION
1	02-17-20	ADDRESSING FOR PERMITS
2	05-10-21	ADDRESSING FOR CONSULTANT COMMENTS
3	06-14-21	FINAL SET

**STONERIDGE BARN WY.  
PLAN AND PROFILE**

FOR  
**KALAS FALLS**

SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA

FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

**AMERICAN Engineering**

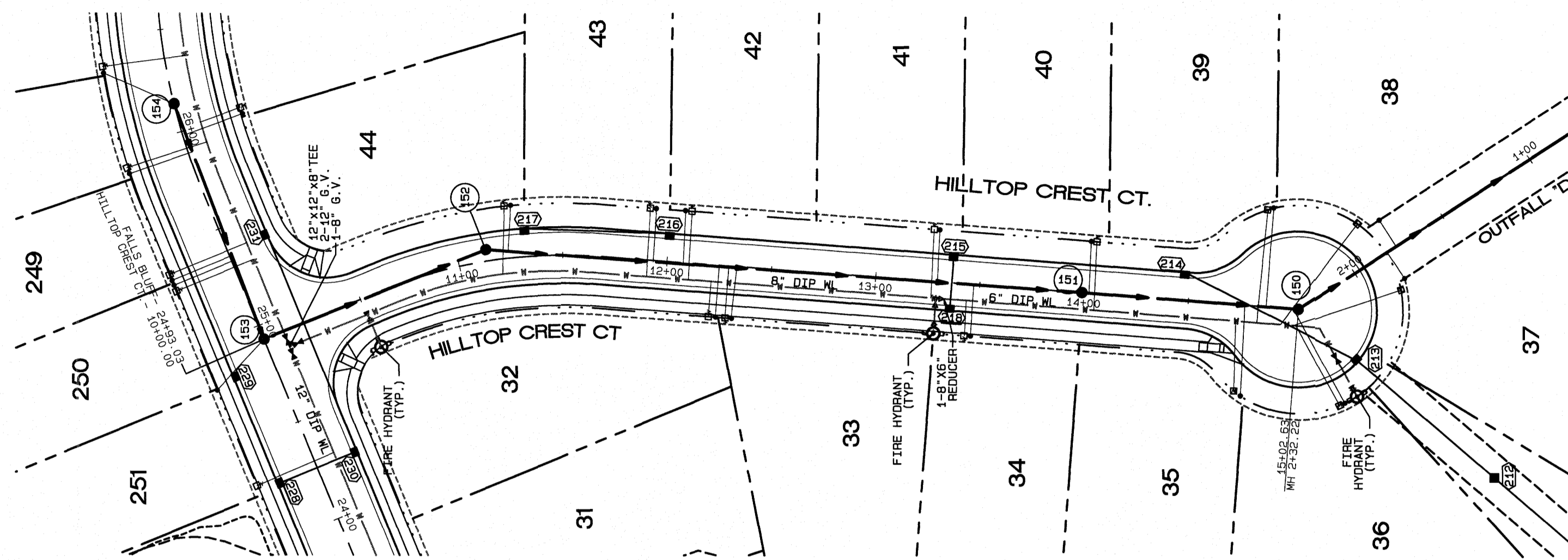
American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-489-1101

6.15.21

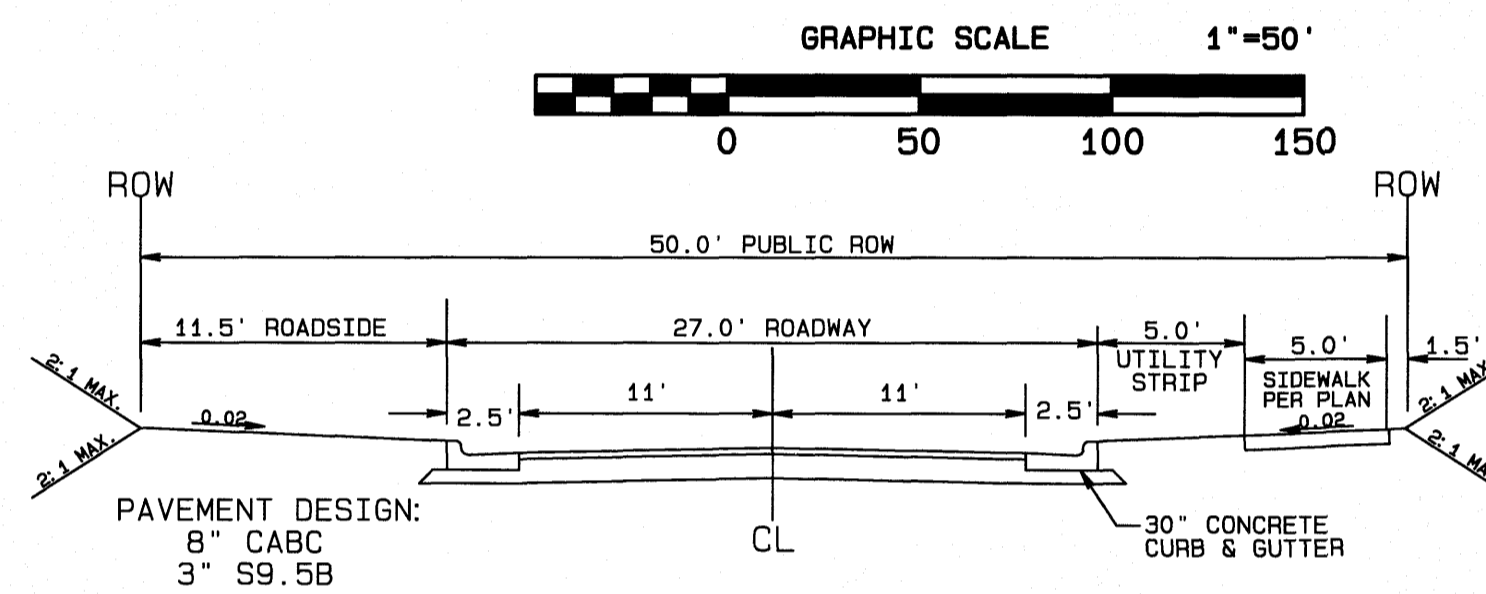
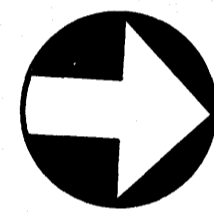
SEAL 9810

**SHEET NO. 9.0**



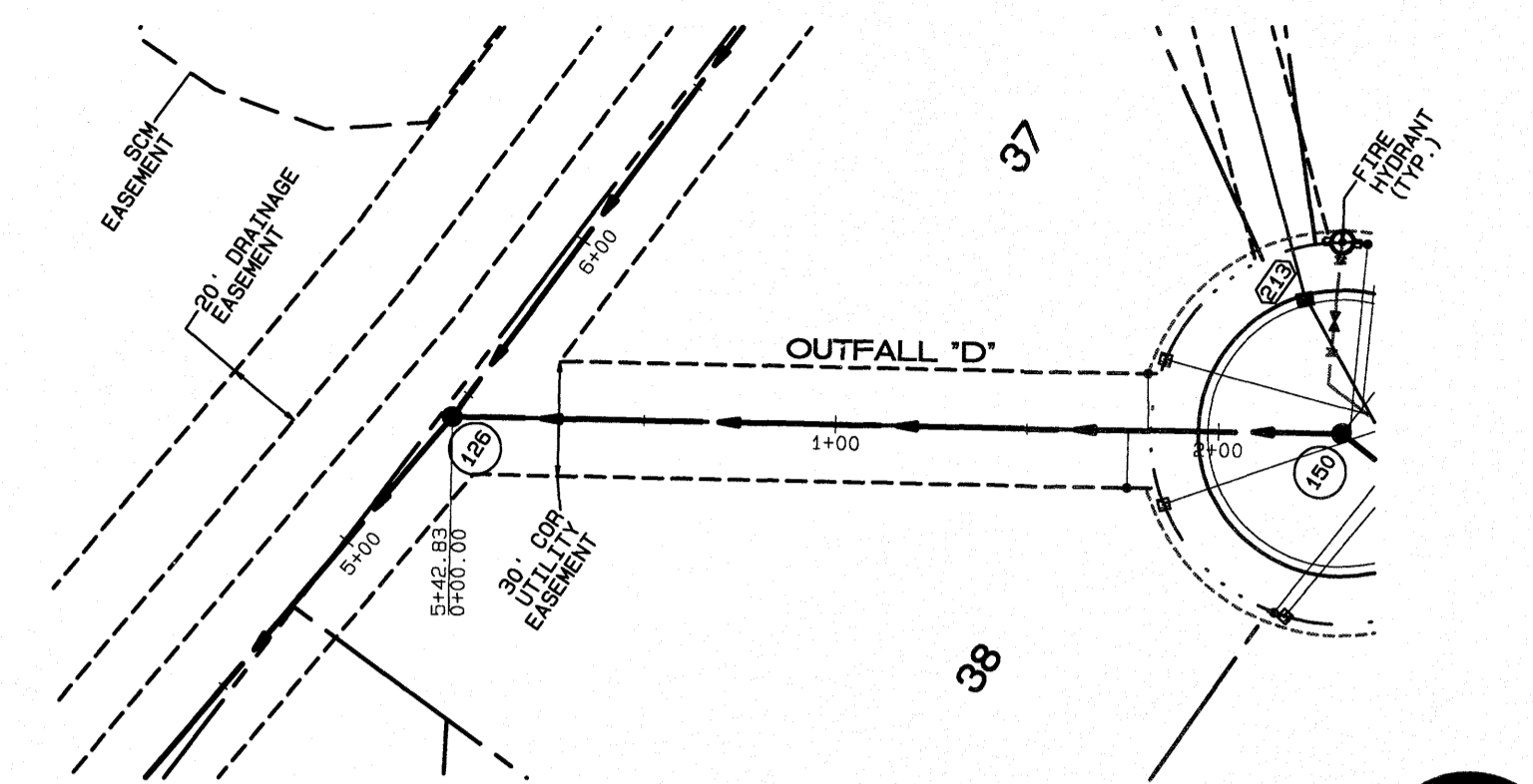


HILL TOP CREST COURT  
27' B-B (50' ROW)

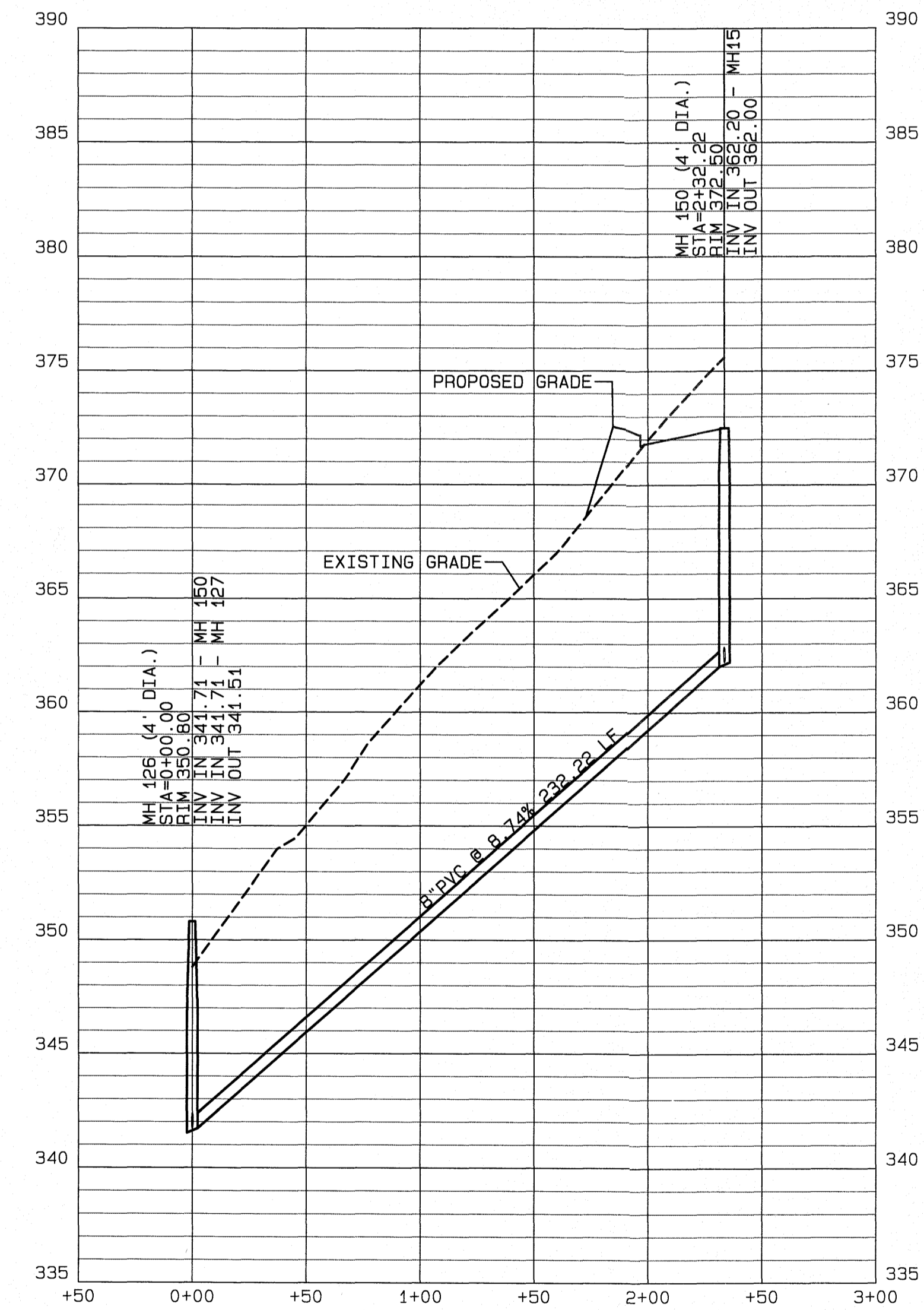
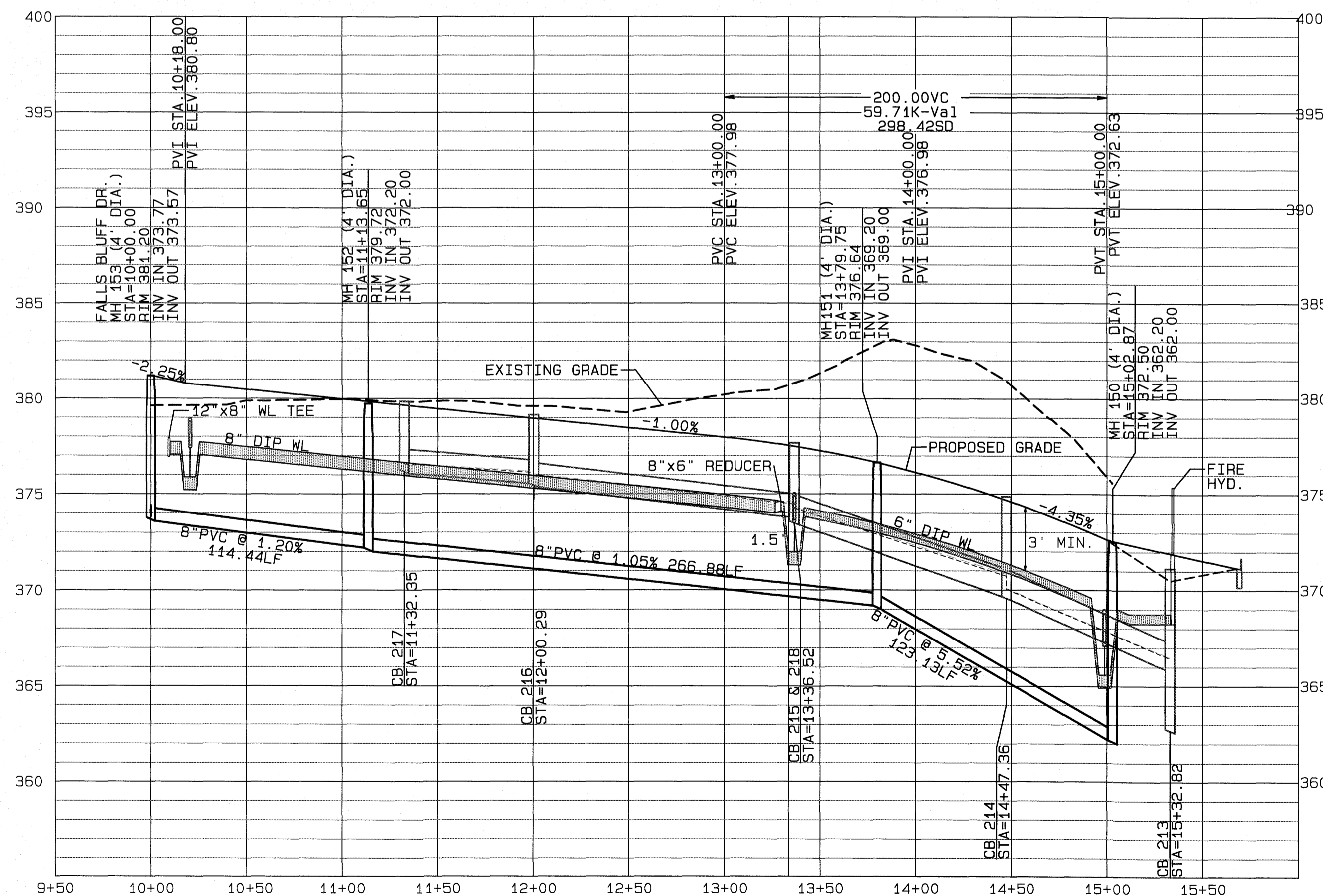
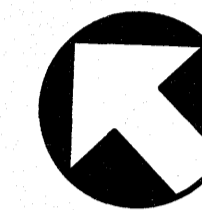


NOTE:  
1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.  
2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5" LIFTS.

TYPICAL SECTION



OUTFALL "D"  
MH150 THRU 126



GENERAL NOTE:  
1. ALL SANITARY SEWER PIPE GREATER THAN 12" DEPTH IS TO BE SDR 26 WITH #57 STONE FOR THE FIRST FOOT OF BACKFILL ABOVE THE PIPE CROWN UNLESS OTHERWISE NOTED.

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # S-4824.

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval

Raleigh Water Review Officer

FILE: Z:\Jobs\9500\Watkins Property\dwg\Map\Kalaas Falls Base Phase 1.prp

No.	DATE	REVISION
1	12-1-20	ADDRESSING FOR 1ST REVIEW COMMENTS
2	05-10-21	ADDRESSING FOR CONSULTANT COMMENTS
3	09-14-21	FINAL SET

HILL TOP CREST COURT AND  
OUTFALL D PLAN AND PROFILE

FOR  
KALAS FALLS  
SITUATED AT  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

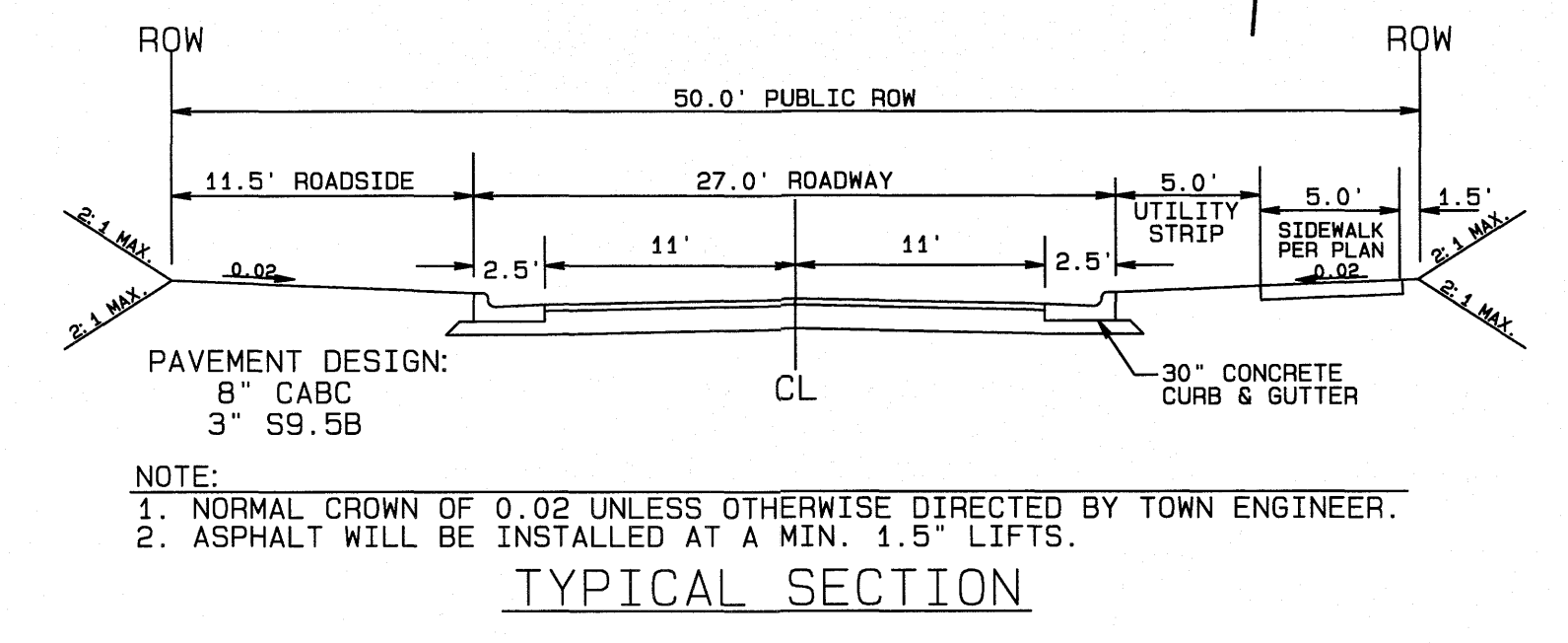
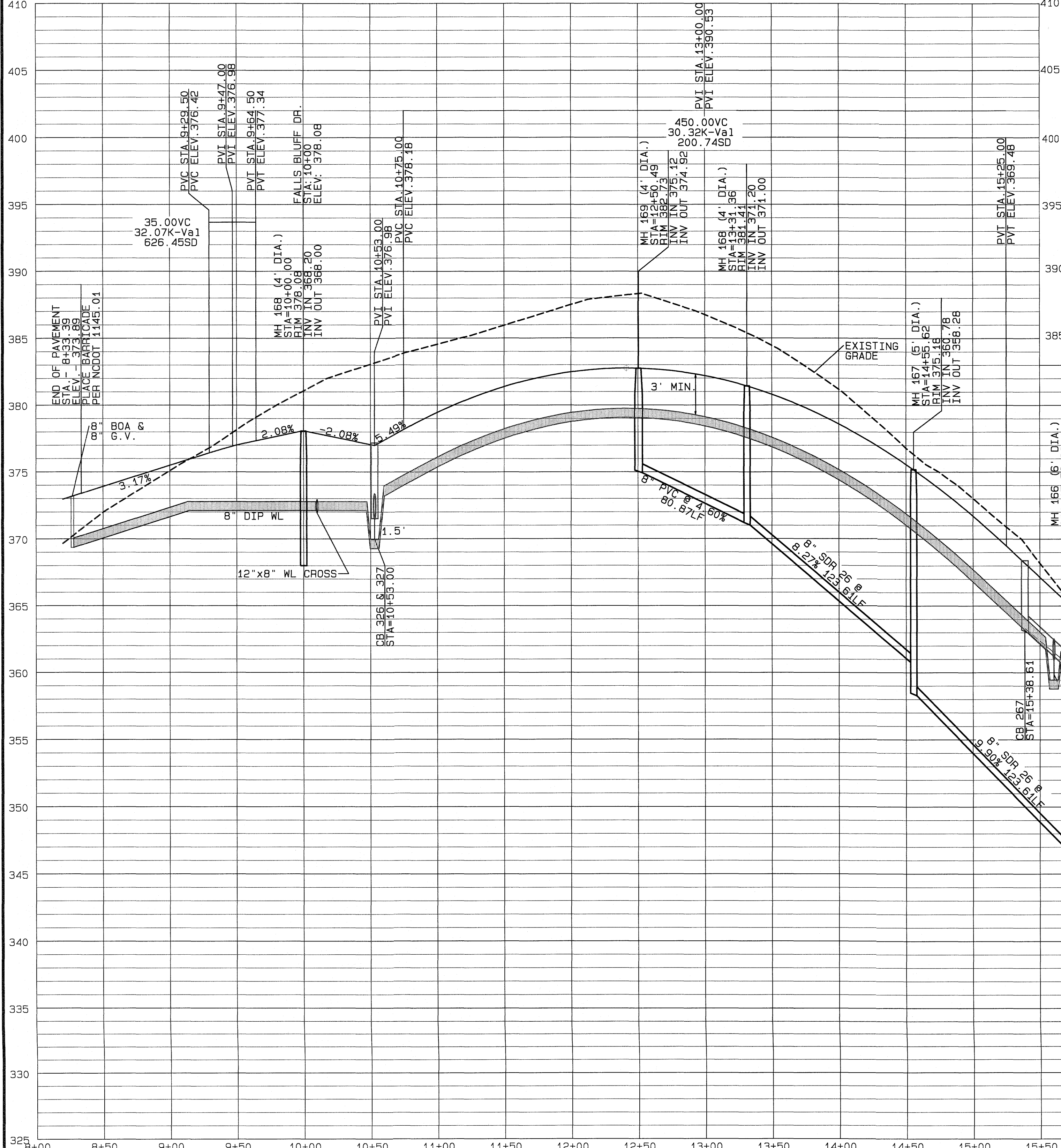
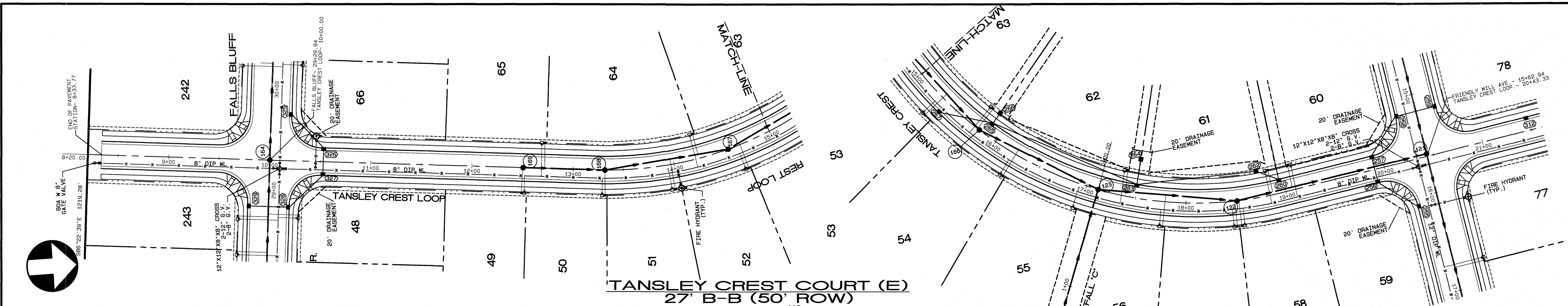
JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN**  
Engineering

American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

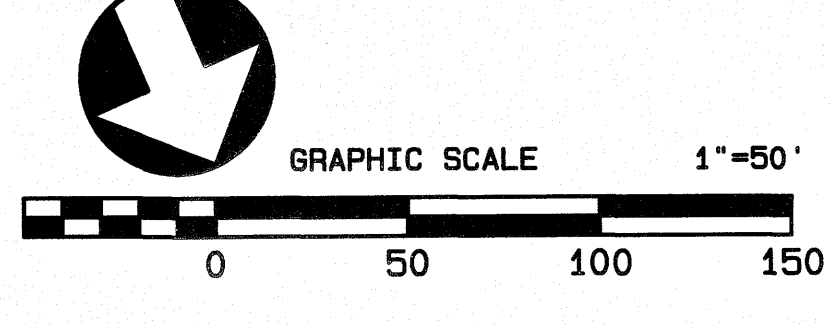
6-15-21  
SHEET NO.  
10.0





NOTE:  
 1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.  
 2. ASPHALT WILL BE INSTALLED AT A MIN. 1.5" LIFTS.

GENERAL NOTE:  
 1. ALL SANITARY SEWER PIPE GREATER THAN 12" DEPTH IS TO BE SDR 26 WITH #57 STONE FOR THE FIRST FOOT OF BACKFILL ABOVE THE PIPE CROWN UNLESS OTHERWISE NOTED.



FILE: Z:\Jobs\9800\Watk\ins\_Property\dwg\Kasas Falls\_Base Phase 1.dwg

**TANSLEY CREST LOOP (E)**  
**PLAN AND PROFILE**

FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

**AMERICAN**  
 Engineering

American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

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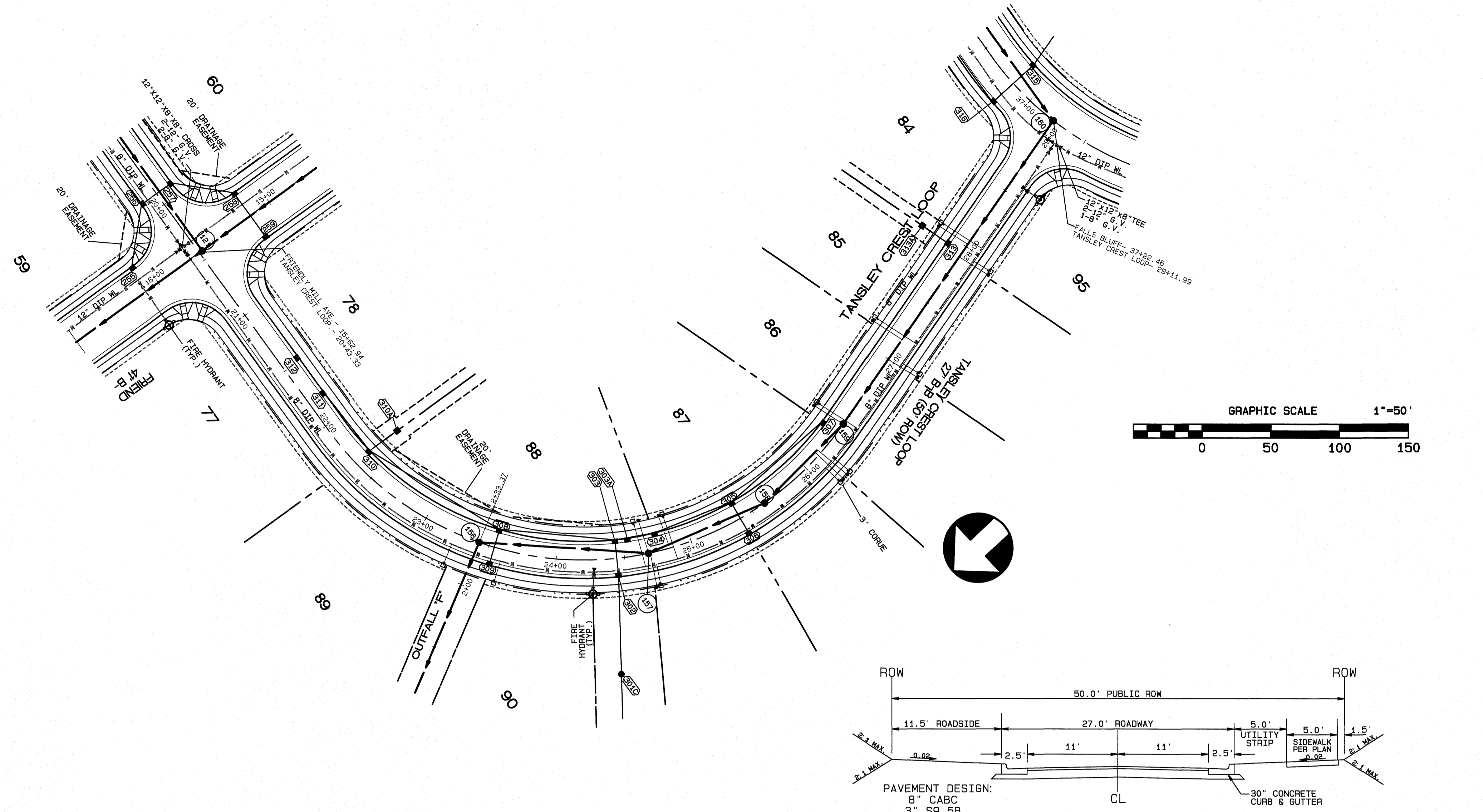
City of Raleigh Development Approval

Raleigh Water Review Officer

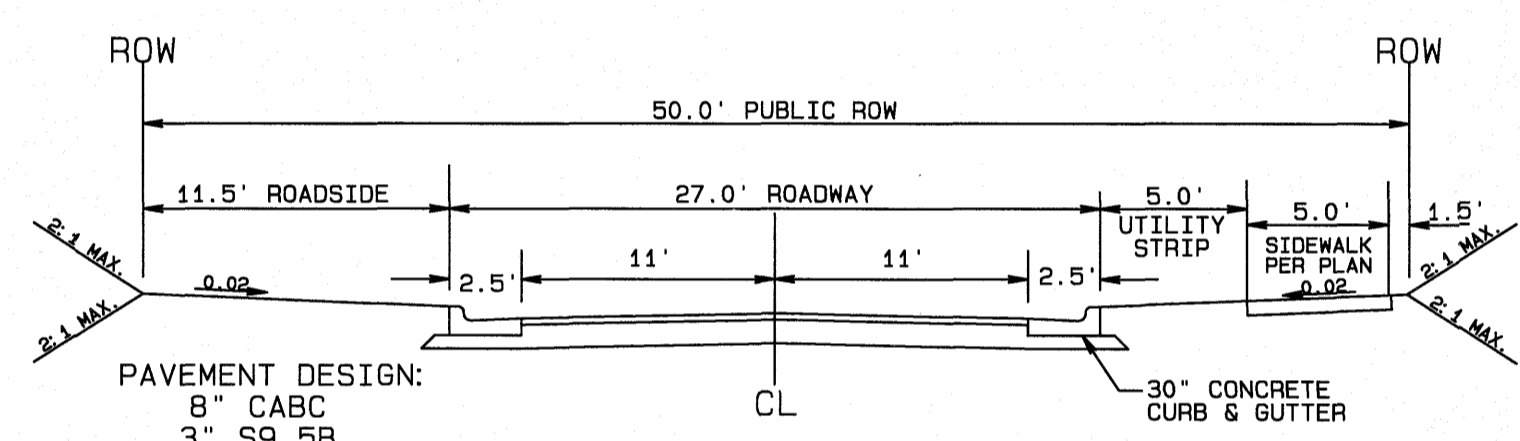
DATE: 07/14/2024 TIME: 9:25AM

SHEET NO.  
**11.0**





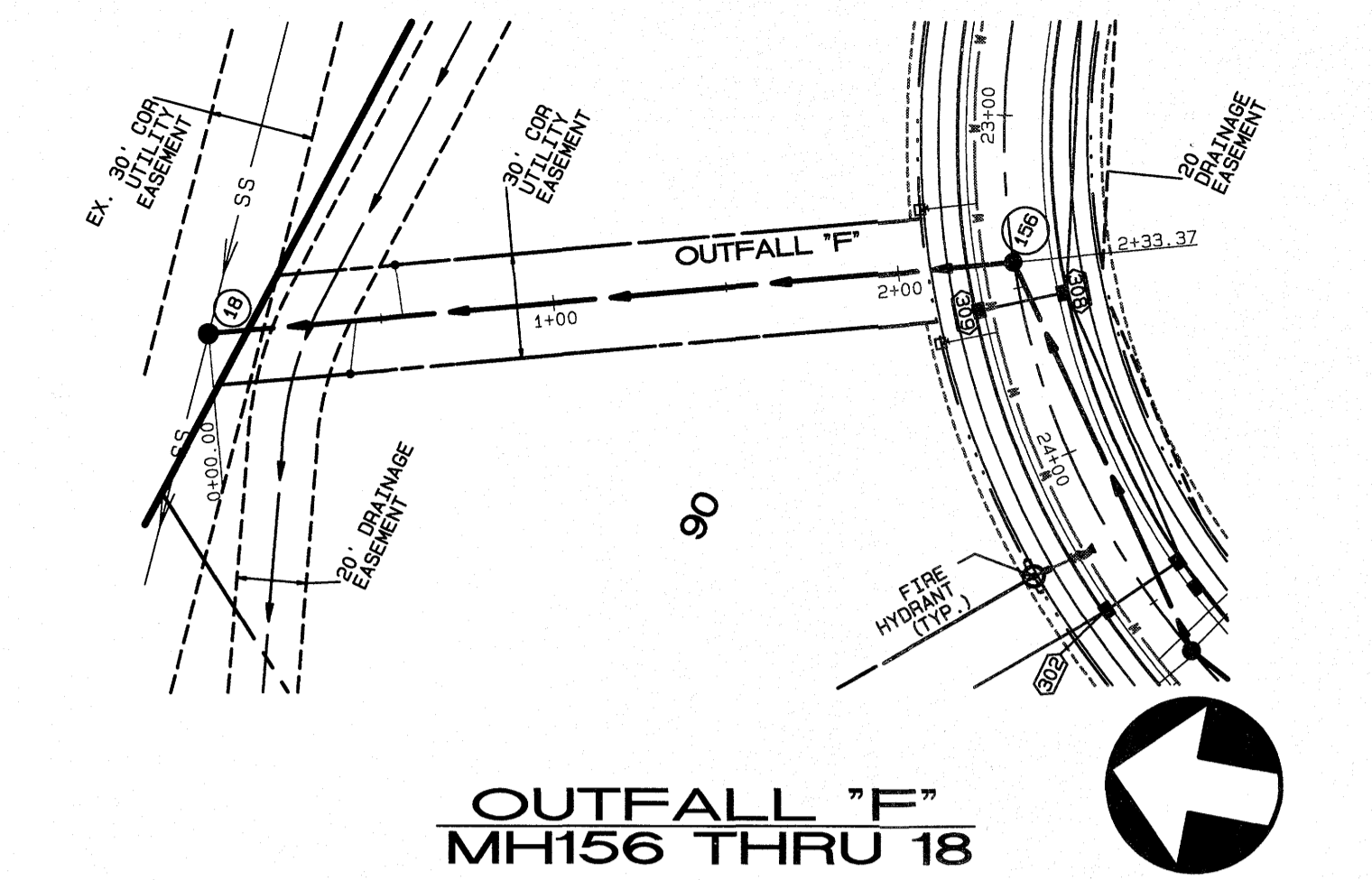
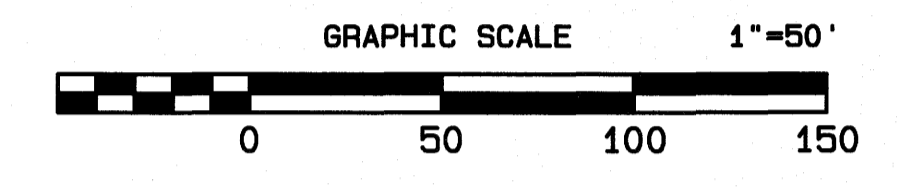
**TANSLEY CREST COURT (W)  
27' B-B (50' ROW)**



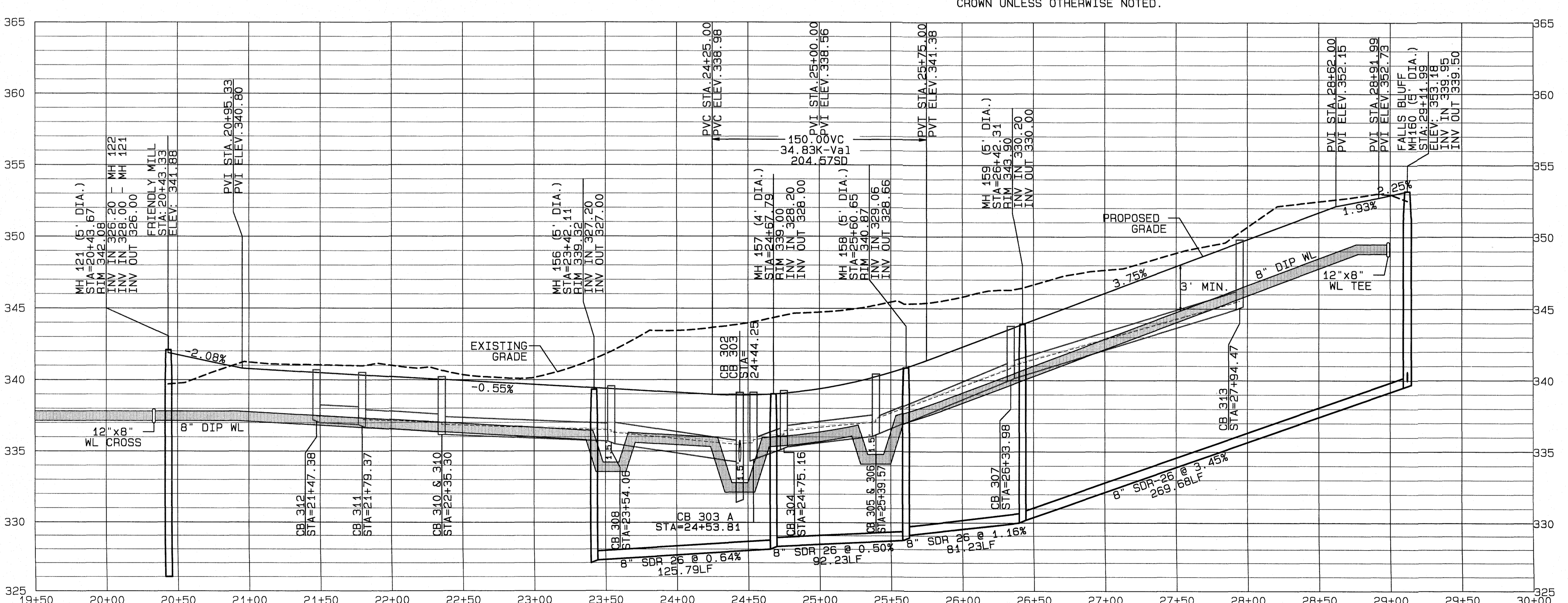
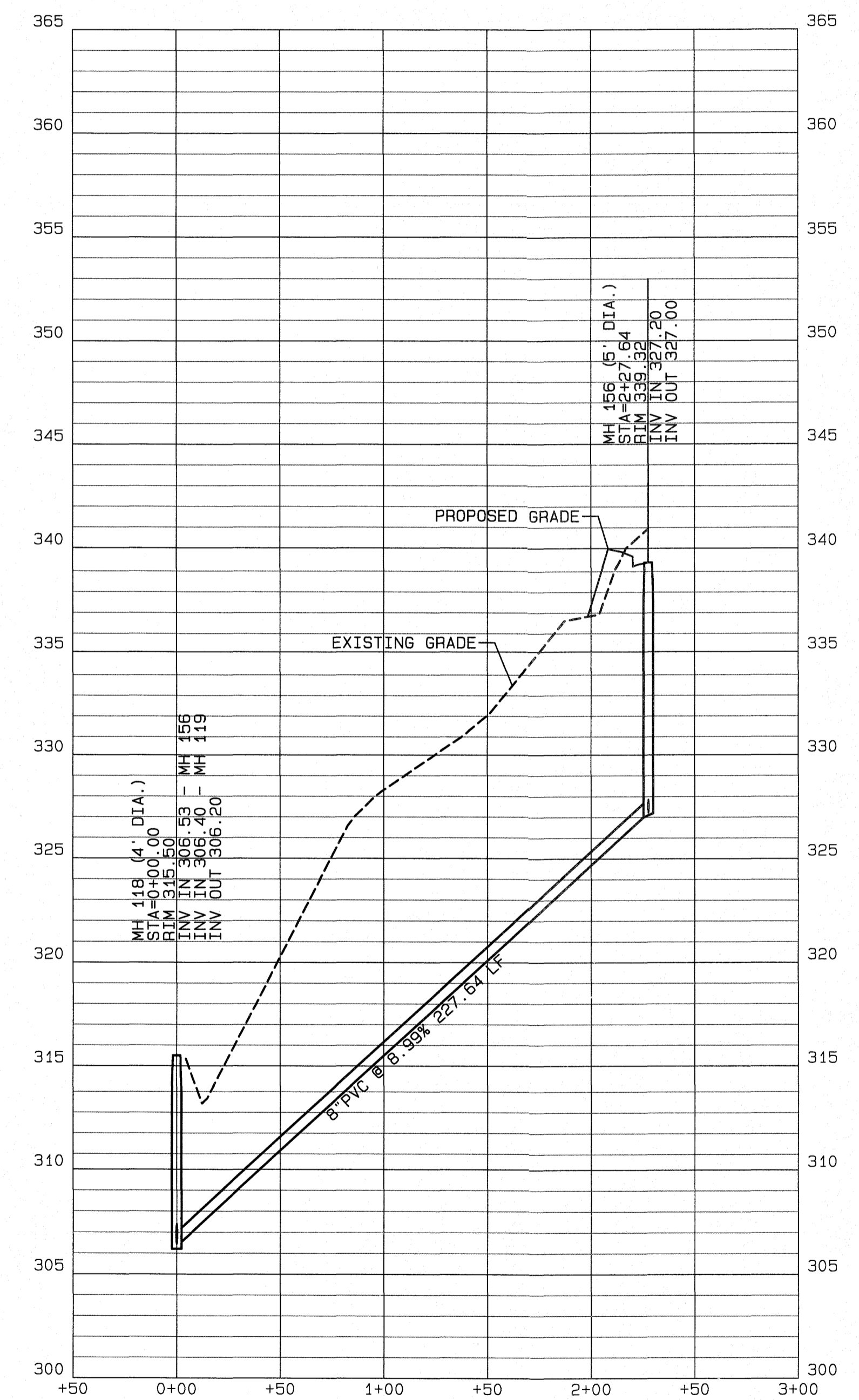
**TYPICAL SECTION**

NOTE:  
 1. NORMAL CROWN OF 0.02 UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.  
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**OUTFALL "F"  
MH156 THRU 18**



The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **S-4824**.

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer \_\_\_\_\_

FILE: Z:\Jobs\9900\Wetkins\_Property\dwg\Map\Karas Falls\Base Phase 1.dwg

PLOT DATE: 6/17/2021 Time: 9:27AM

**TANSLEY CREST LOOP (W) AND  
OUTFALL F PLAN AND PROFILE**

FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

**AMERICAN  
Engineering**

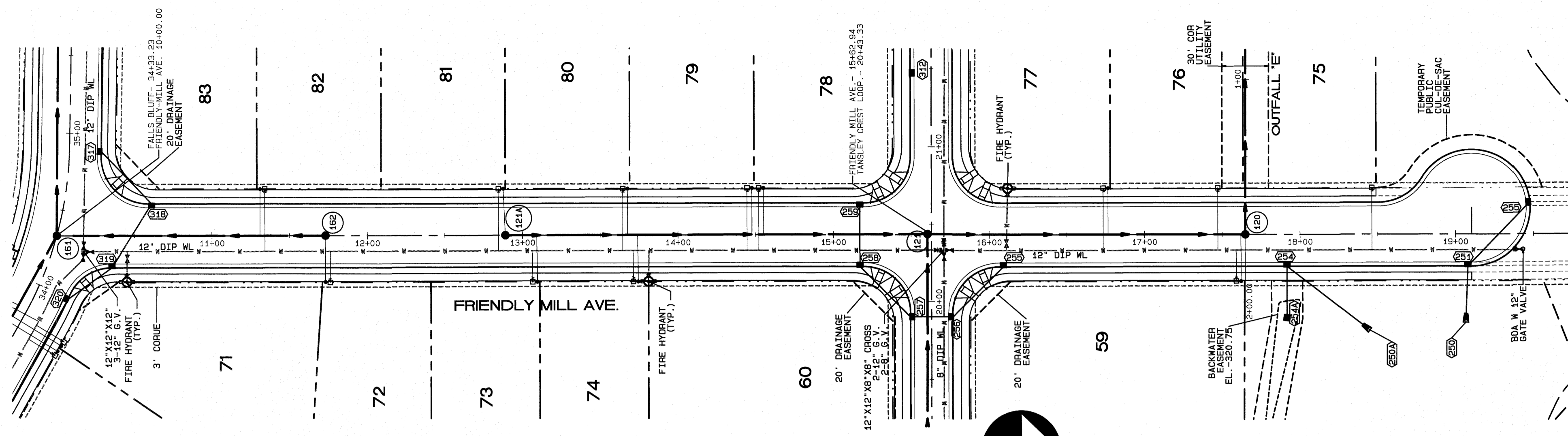
American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

SEAL  
 9810  
 ENGINEER  
 JOHN F. HARRIS

6/17/21

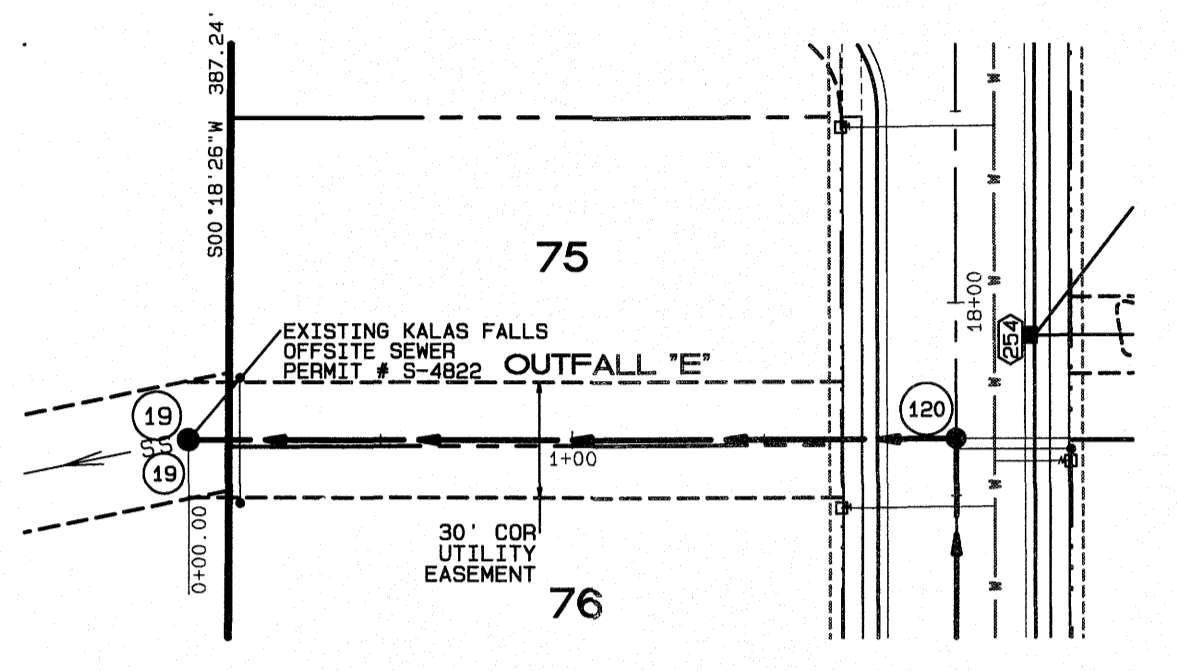
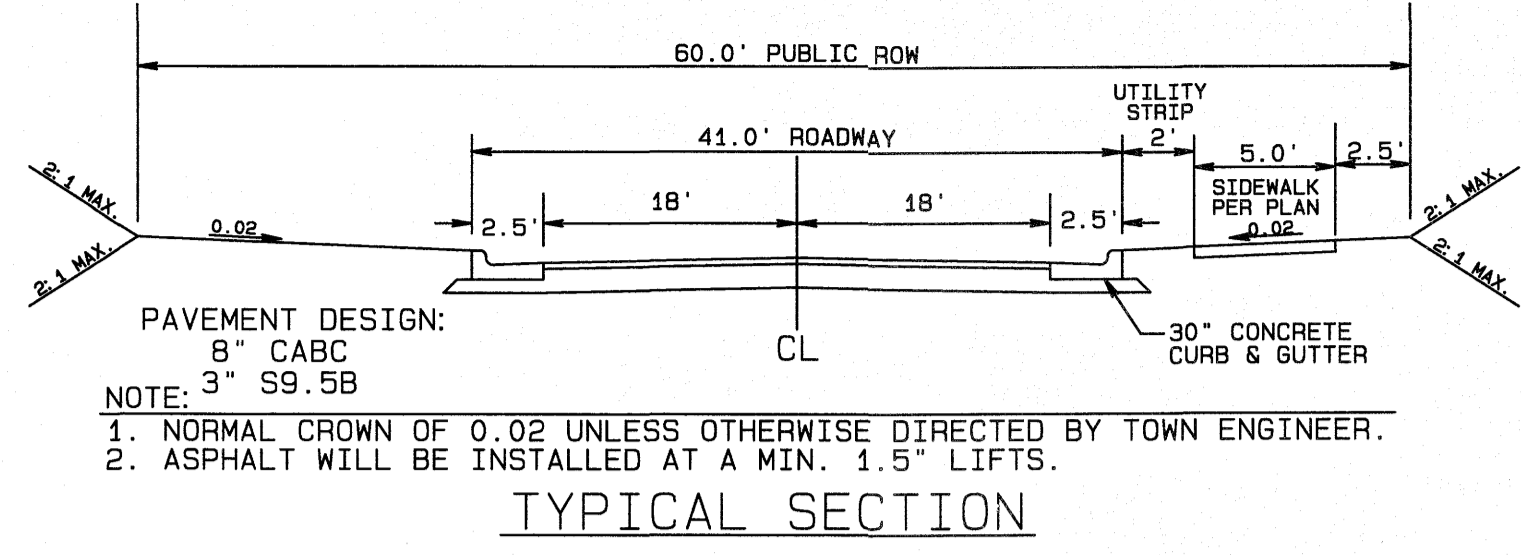
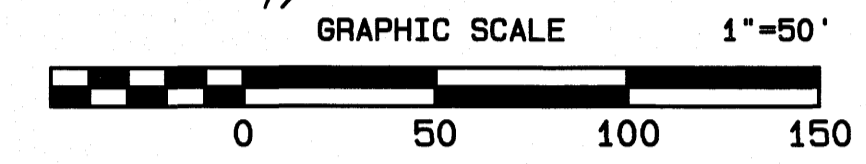
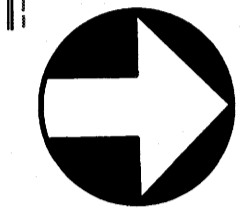
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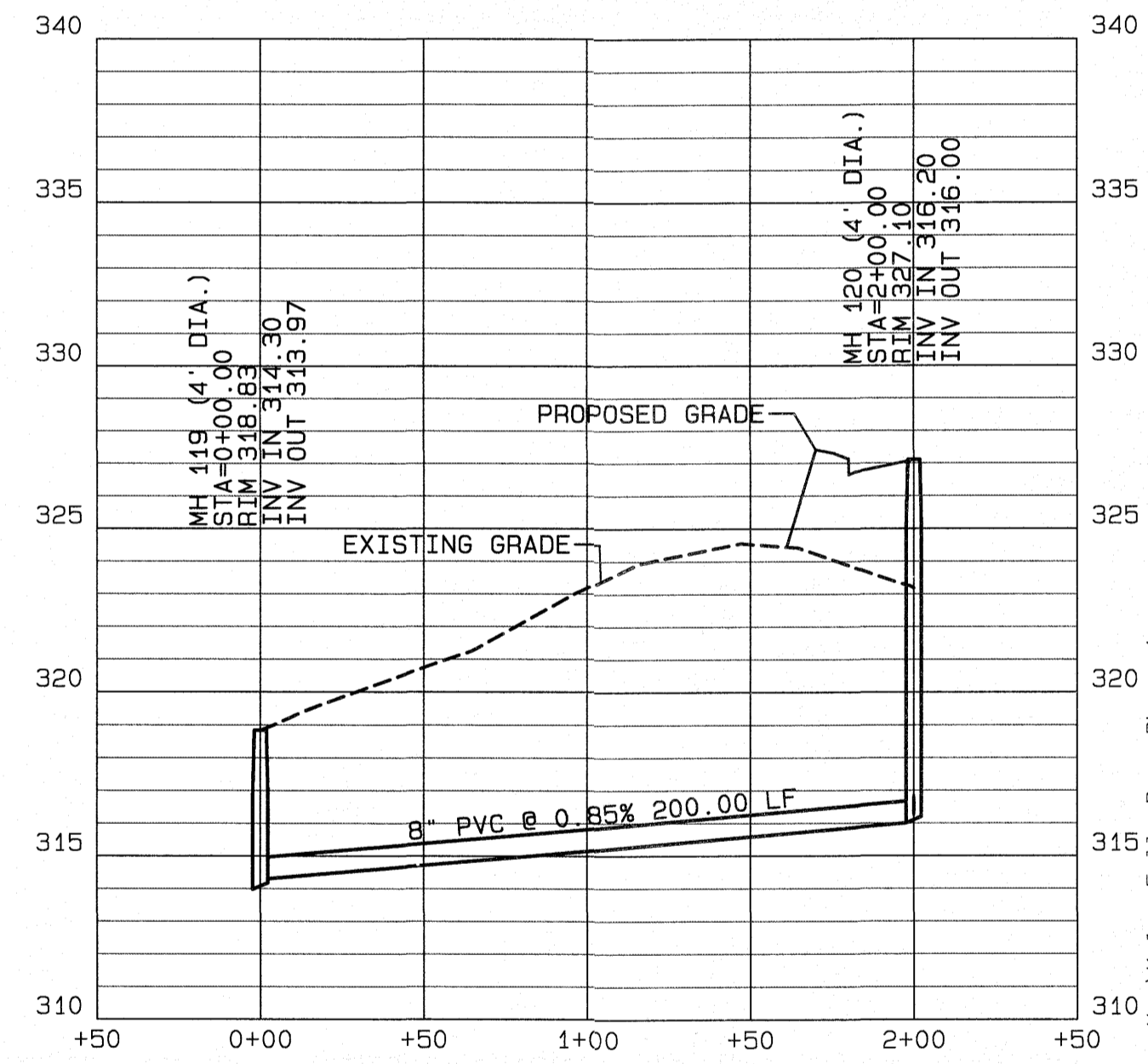
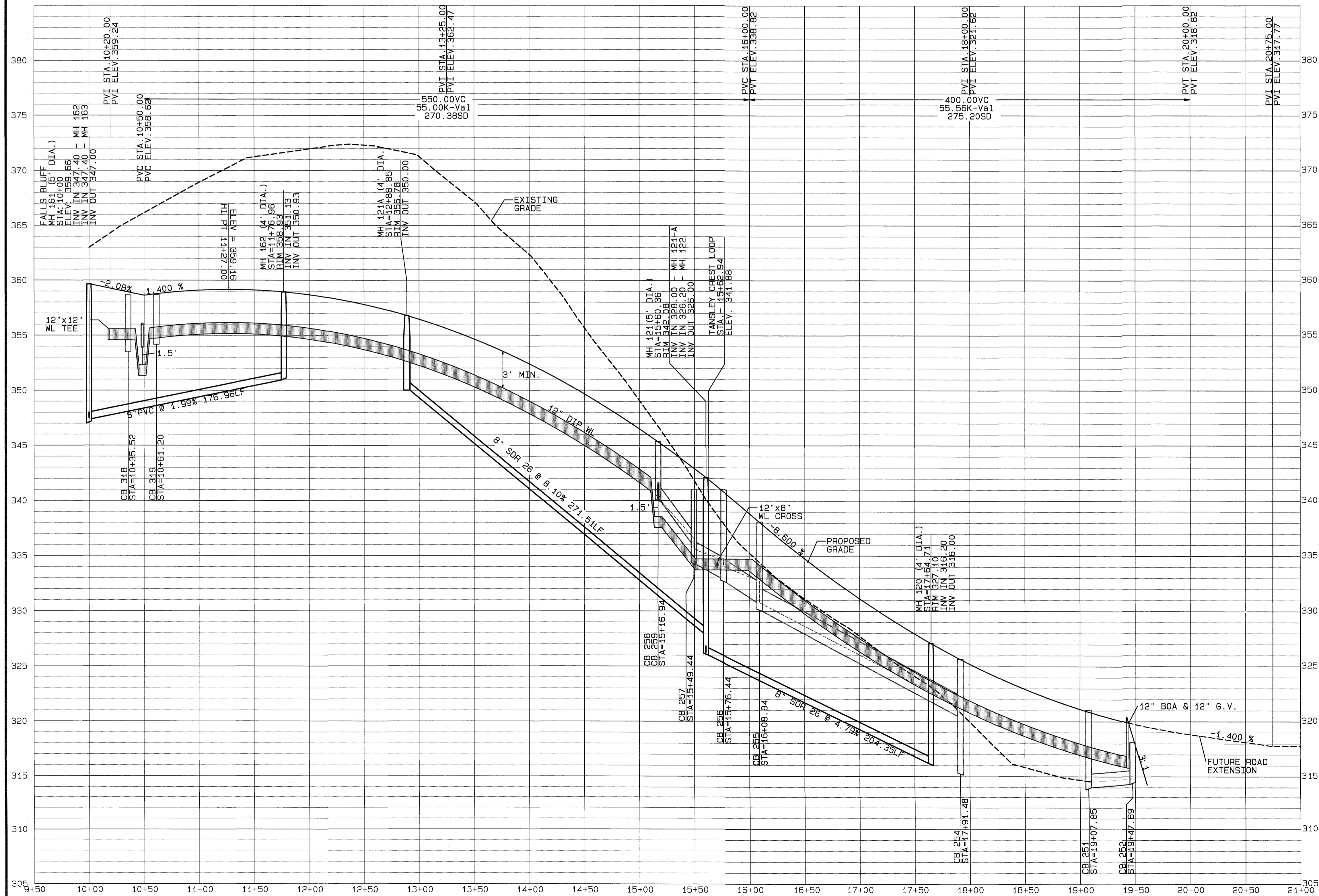
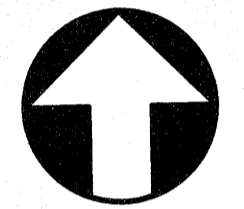


GENERAL NOTE:  
 1. ALL SANITARY SEWER PIPE GREATER THAN 12" DEPTH IS TO BE SDR 26 WITH #57 STONE FOR THE FIRST FOOT OF BACKFILL ABOVE THE PIPE CROWN UNLESS OTHERWISE NOTED.

**FRIENDLY MILL  
 41' B-B (60' ROW)**



**OUTFALL 'E'  
 MH120 THRU 19**



FILE: Z:\Jobs\9900\Map\Karas Falls Map\Karas Falls Base Phase 1.prn

Time: 9:58AM

PLOT: D:\p... 5/14/2021

Scale: 1/8"=1'-0"

Sheet: 13.0

Project: 9900

Client: City of Raleigh

Location: 1832 Rolesville Road, Wake County, NC

Permit: S-4824

Drawn by: BAH

Checked by: JRH

Job number: 9900

Date: 4/24/2020

Revision table with columns: No., Date, Description, By, Appr.

1. 05-12-21 Final Set

2. 05-12-21 Review Comments

3. 05-12-21 Final Set

4. 05-12-21 Final Set

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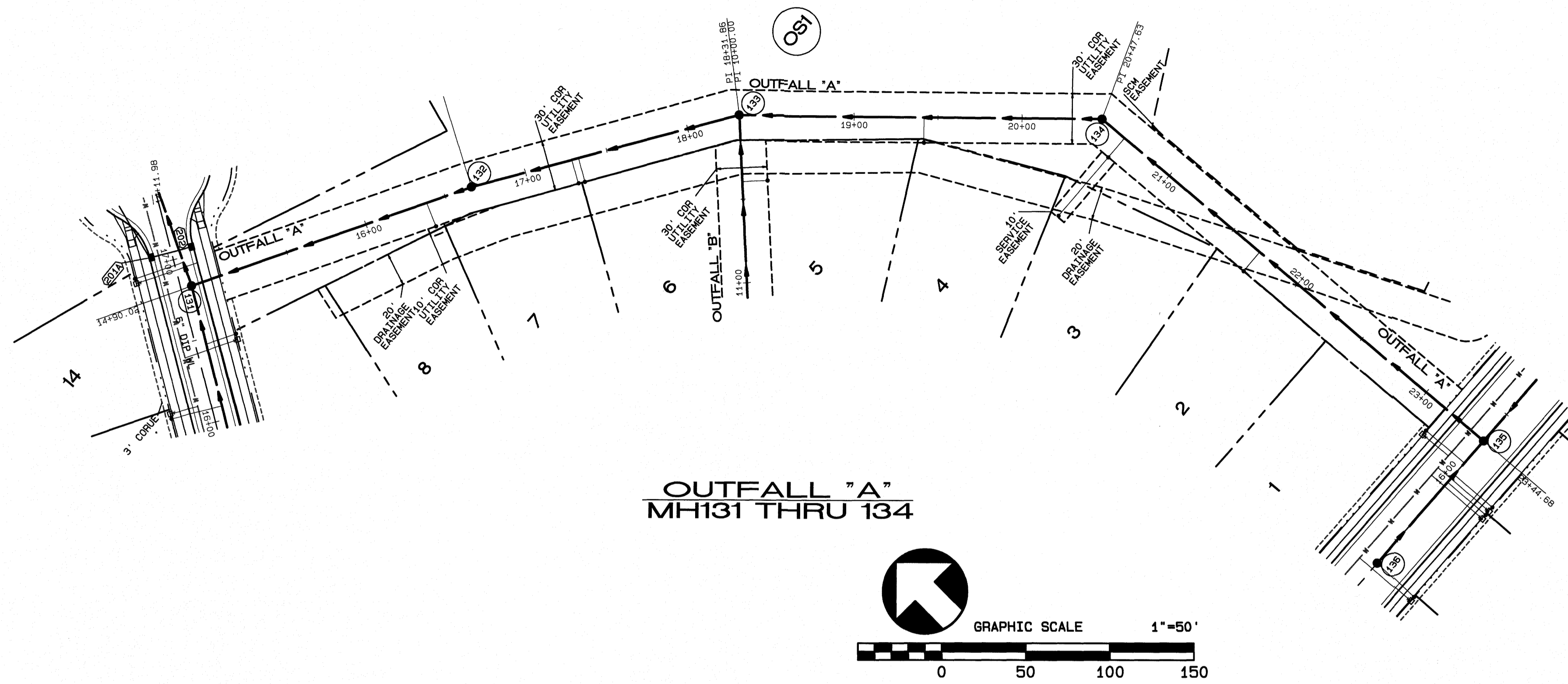
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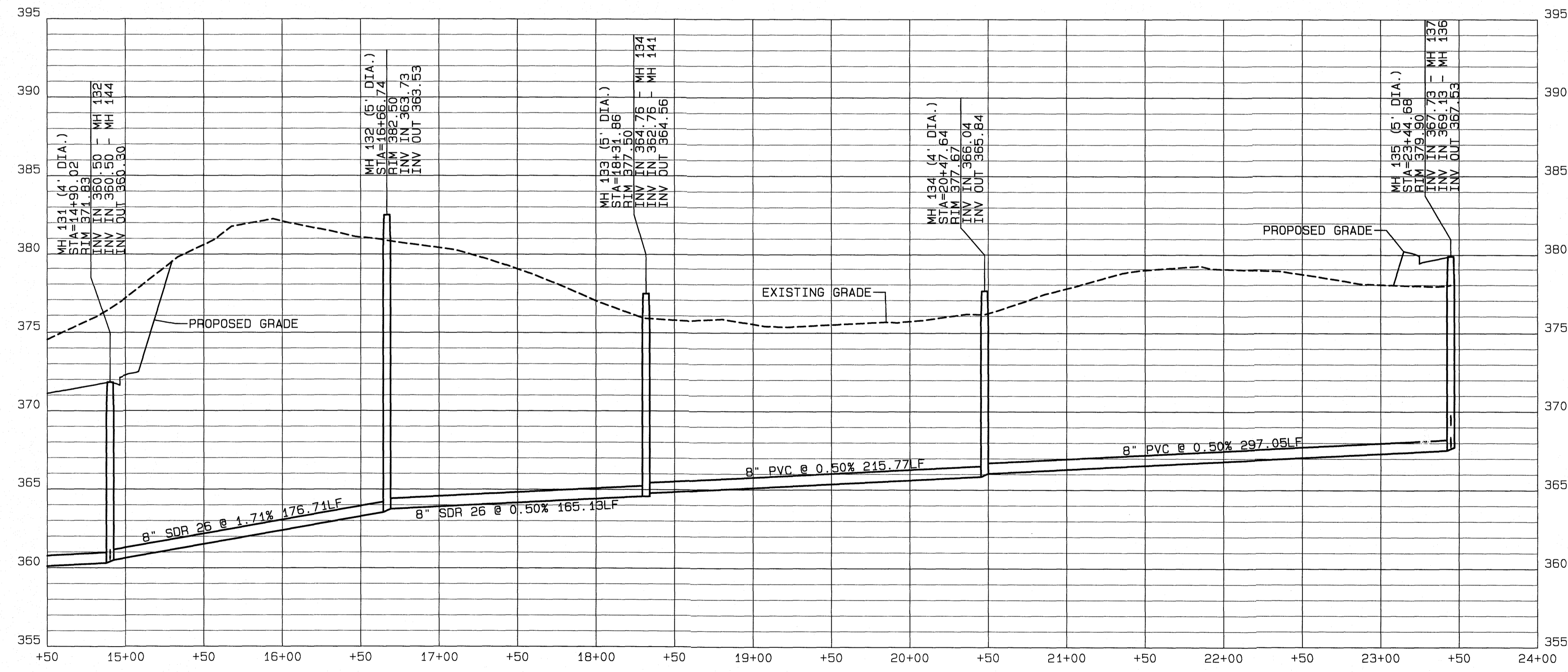
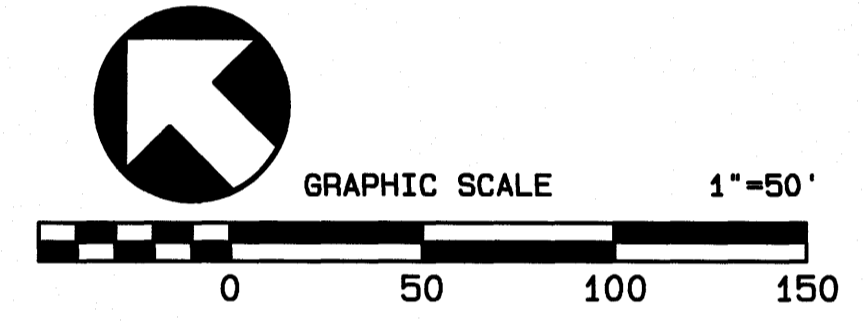
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GENERAL NOTE:  
 1. ALL SANITARY SEWER PIPE GREATER THAN 12' DEPTH IS TO BE SDR 26 WITH #67 STONE FOR THE FIRST FOOT OF BACKFILL ABOVE THE PIPE CROWN UNLESS OTHERWISE NOTED.



OUTFALL "A"  
 MH131 THRU 134



**SANITARY SEWER OUTFALL A  
 PLAN AND PROFILE**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: BRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

**AMERICAN**  
 Engineering  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

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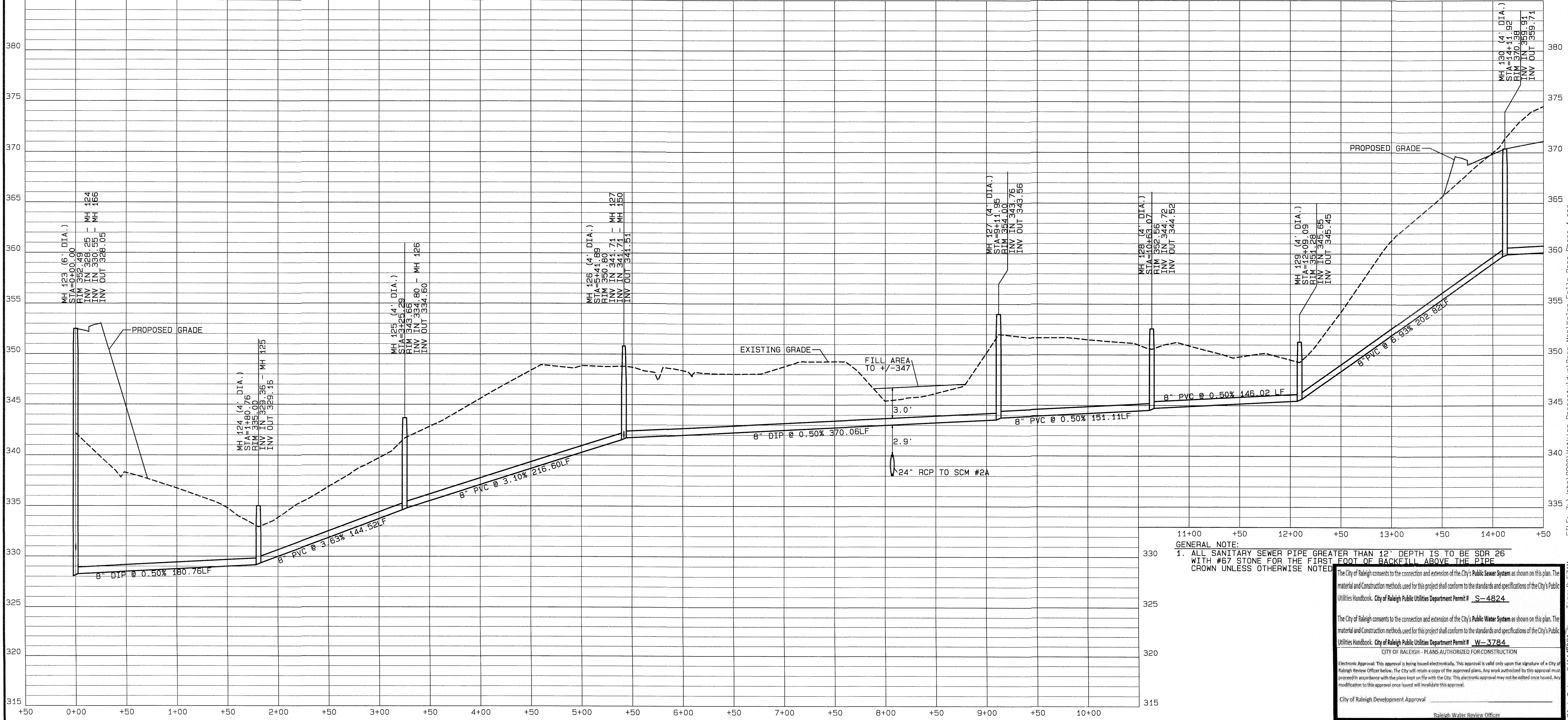
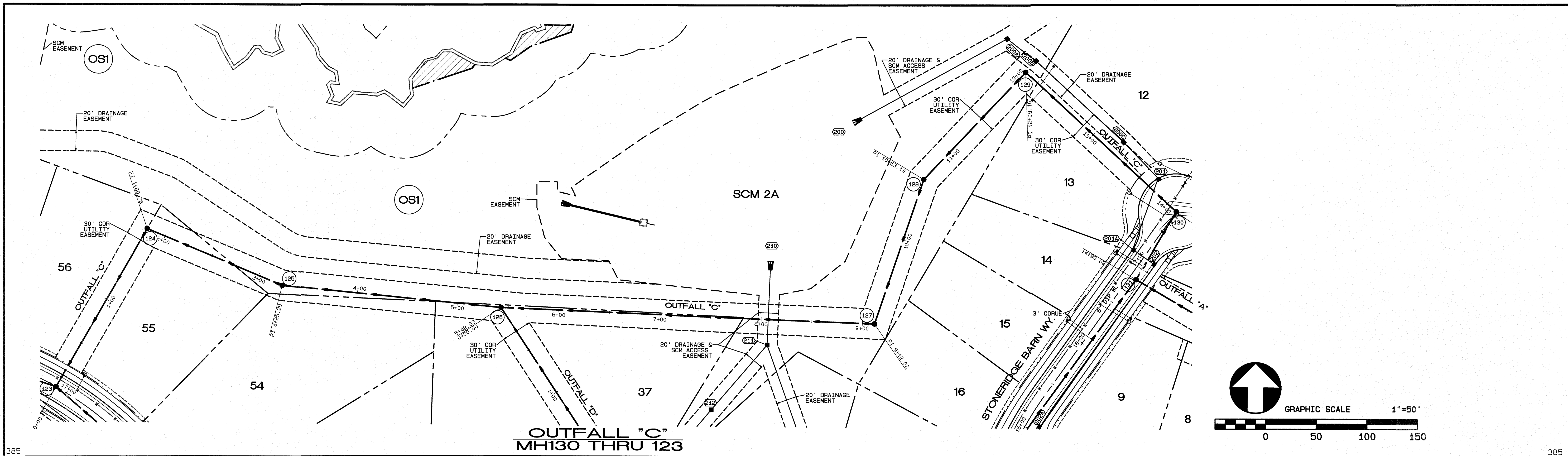
City of Raleigh Development Approval

FILE: Z:\Jobs\9900\Watkins Property\Map\Karas Falls Base Phase 1.prn  
 Time: 9:30AM  
 PLOT DATE: 16/14/2023

6-15-21  
 SHEET NO.  
**14.0**

No.	DATE	REVISION
1	12-1-20	ADDRESS LOG COR 1ST REVIEW COMMENTS
2	05-10-21	ADDRESSING FOR CONSULTANT COMMENTS
3	05-14-21	FINAL SET





11+00 +50 12+00 +50 13+00 +50 14+00 +50

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City of Raleigh Development Approval

Raleigh Water Review Officer

No.	DATE	REVISION
1	05-02-20	ADDRESSING FOR CONSTRUCTION
2	05-02-20	ADDRESSING FOR CONSULTANT COMMENTS
3	05-01-21	UPDATED PIPE MATERIAL RUNNING INTO MH 123
4	05-14-21	FINAL SET

**SANITARY SEWER OUTFALL C  
 PLAN AND PROFILE**

FOR  
**KALAS FALLS**

SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER: 9900  
 CHECKED BY: JRH  
 DRAWN BY: BAH  
 DATE: 4/24/2020

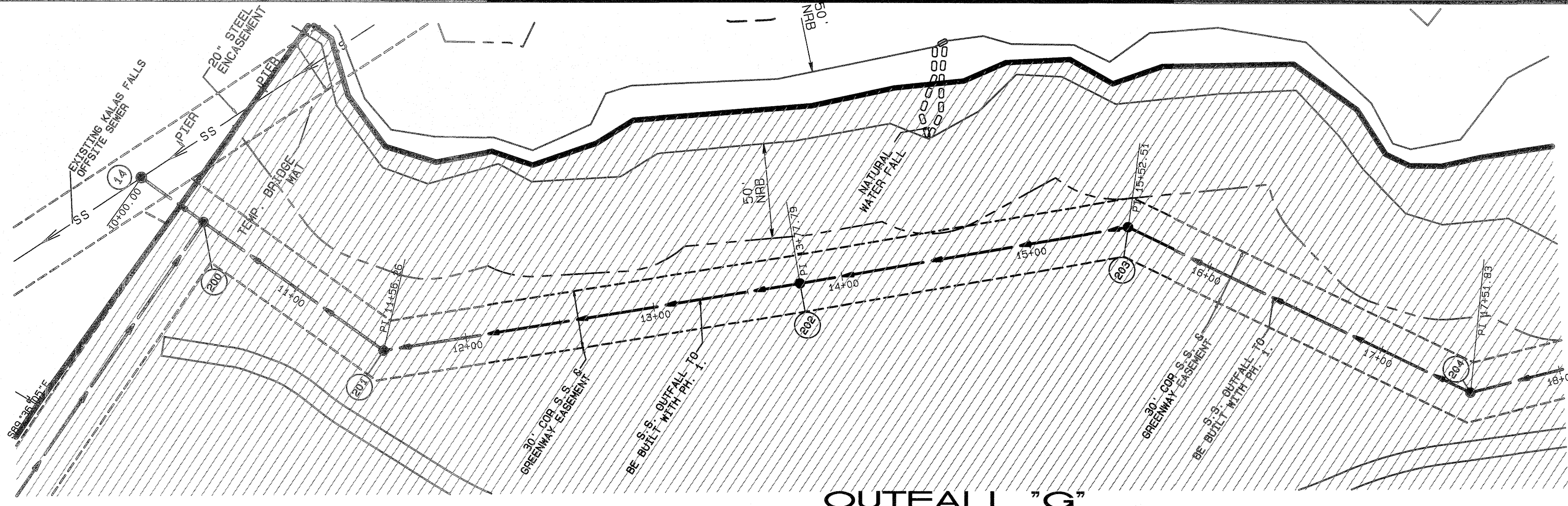
**AMERICAN Engineering**

American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

SEAL 9810  
 ENGINEER  
 JOHN R. HARMAN  
 6/19/21

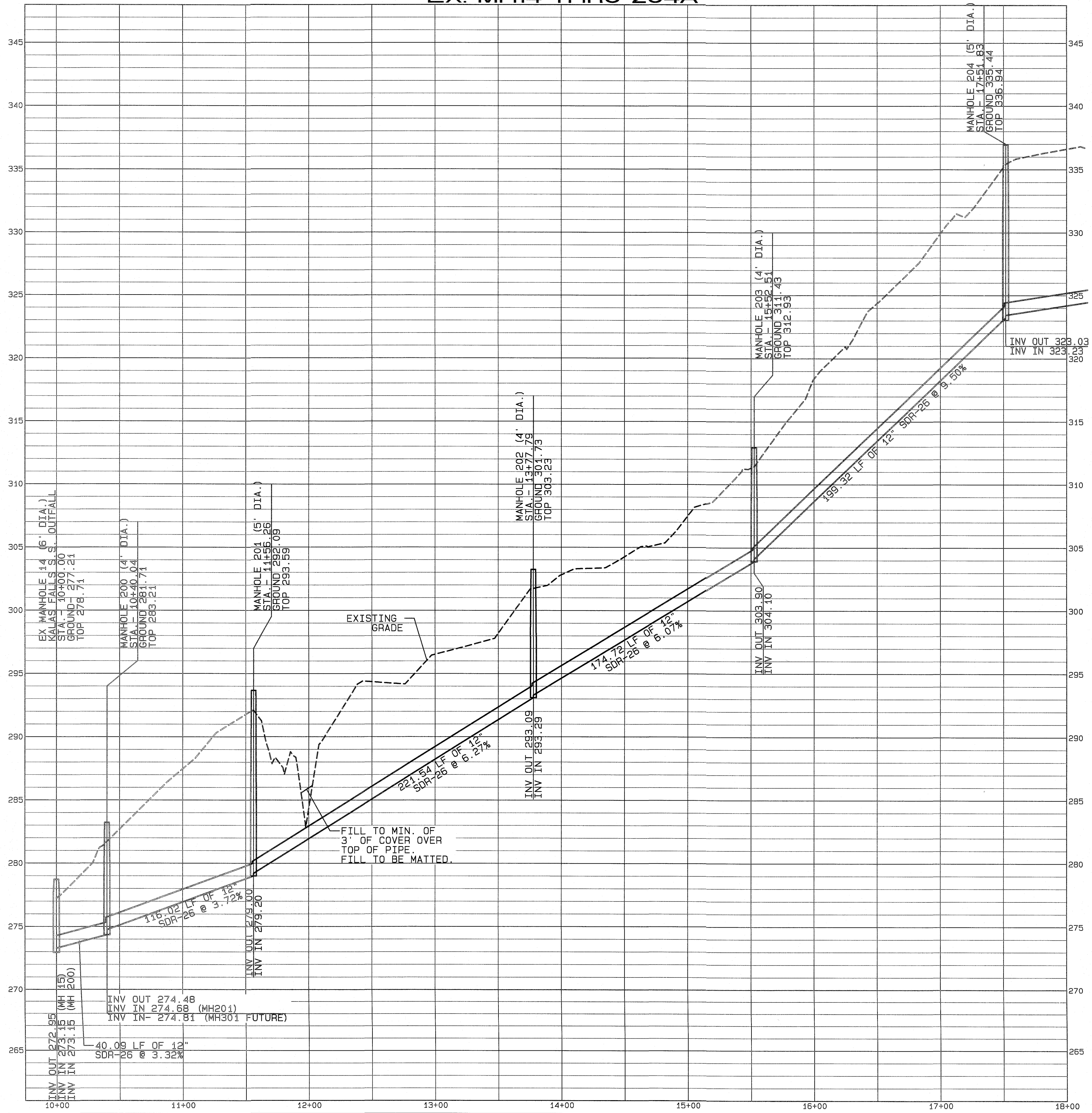
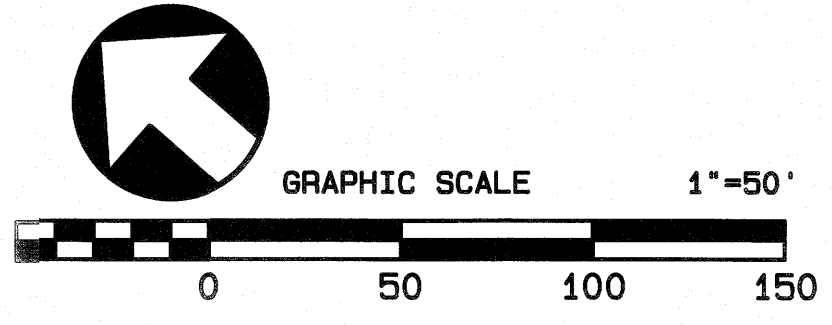
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**OUTFALL "G"  
EX. MH14 THRU 204A**

GENERAL NOTE:  
1. ALL SANITARY SEWER PIPE GREATER THAN 12" DEPTH IS TO BE SDR 26 WITH #67 STONE FOR THE FIRST FOOT OF BACKFILL ABOVE THE PIPE CROWN UNLESS OTHERWISE NOTED.



NO.	DATE	REVISION	DWN/CHK
1	05-12-21	ISSUED FOR CONSTRUCTION	BAH/ARH
2	05-12-21	ADDRESSING FOR CONSTRUCTION	BAH/ARH
3	05-01-21	CORRECTED RIM ELEVATION ON MH 14	BAH/ARH
4	05-14-21	FINAL SET	BAH/ARH

**SANITARY SEWER OUTFALL G  
PLAN AND PROFILE**  
FOR  
**KALAS FALLS**  
SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA  
FIRM # C-3881

JOB NUMBER: 9900  
CHECKED BY: JRH  
DRAWN BY: BAH  
DATE: 4/24/2020

**AMERICAN Engineering**  
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # S-4824.

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # W-3784.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval

Raleigh Water Review Officer

61921

**SEAL 9810**  
JOHN R. HARRIS  
ENGINEER

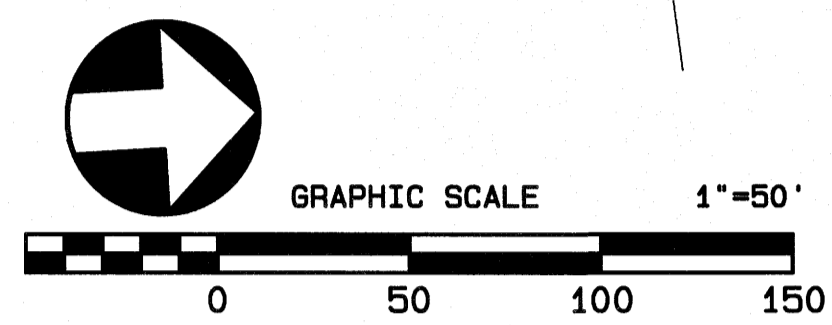
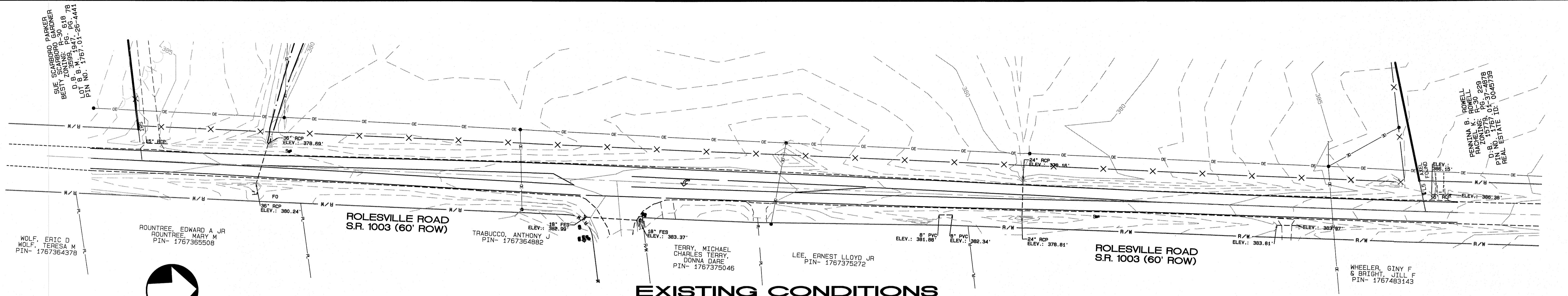
SHEET NO.  
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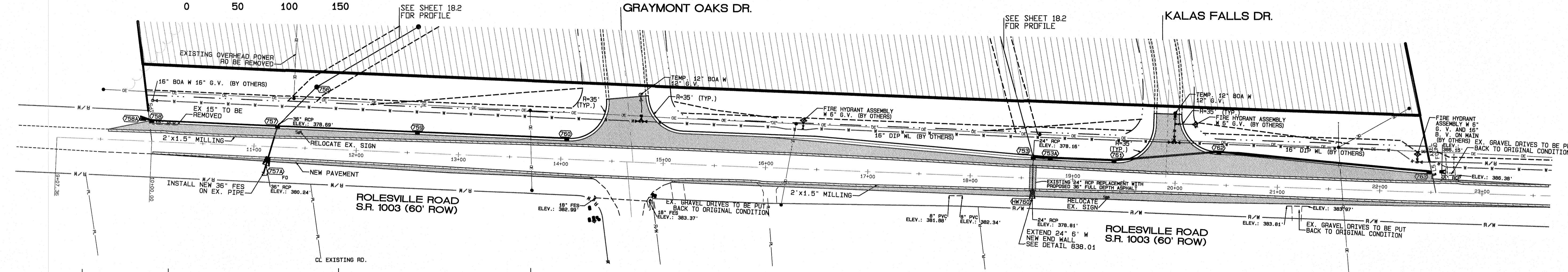




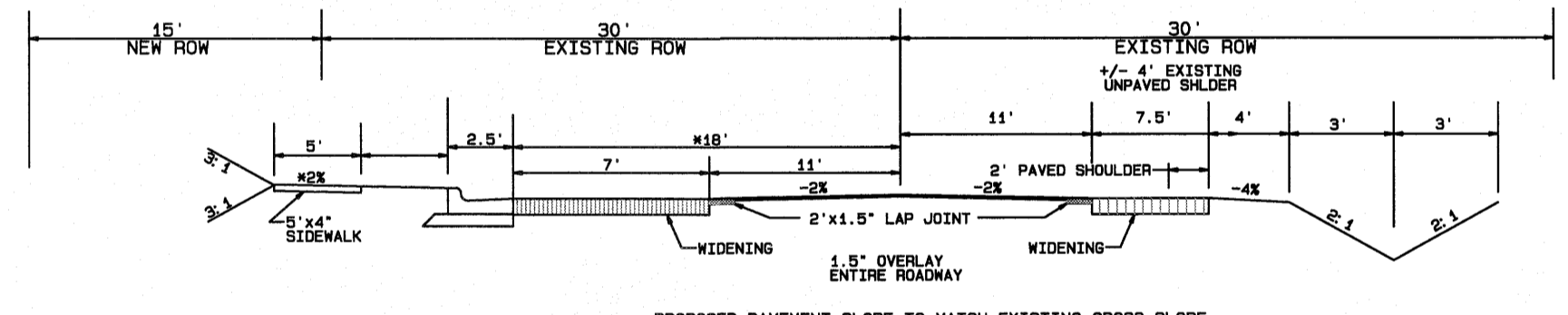




**EXISTING CONDITIONS**



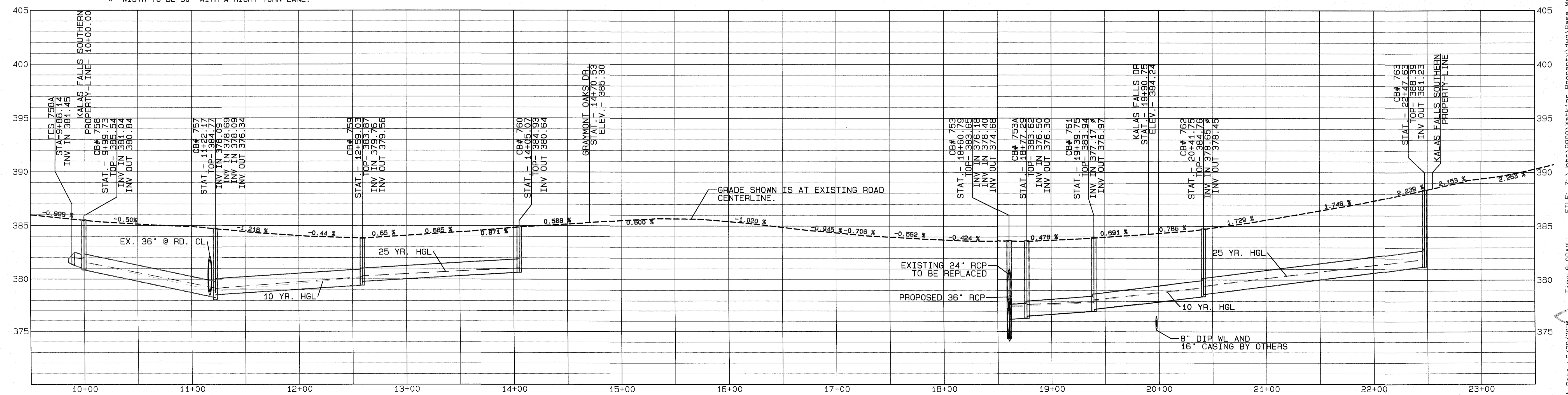
**IMPROVEMENTS**



PAVEMENT DESIGN 6' OR LESS:      PAVEMENT DESIGN GREATER THAN 6':

3" S9.5C	3" S9.5C
4" T-19C	4" T-19C
5" B25.0C	10" ABC

- GENERAL NOTES:
- PAVEMENT DESIGN TO BE DESIGNATED BY NCDOT ENCROACHMENT AGREEMENT OVERLAY OR LAP JOINT TO BE DETERMINED BY NCDOT ENCROACHMENT AGREEMENT.
  - CONTRACTOR IS RESPONSIBLE FOR CONTACTING 811 AT A MINIMUM OF 3 DAYS BEFORE STARTING TO DIG. 811 OR 1-800-632-4949.
- \* WIDTH TO BE 30' WITH A RIGHT TURN LANE.



Plot Date: 6/28/2024 Time: 8:09AM FILE: Z:\Jobs\9500\Watkins Property\dwg\Bases Map\Kalas Falls Base Phase 1.dwg

NO.	DATE	REVISION
1	05/10/24	ADDRESSING, TOP CONSULTING COMMENTS
2	06/28/24	ADDRESSING, NCDOT COMMENTS

**ROLESVILLE ROAD SOUTHERN SECTION  
EXISTING AND IMPROVEMENTS**

FOR  
**KALAS FALLS**

SITUATED AT  
**1832 ROLESVILLE ROAD**  
WAKE COUNTY, NORTH CAROLINA

FIRM # C-3881

JOB NUMBER:  
CHECKED BY:  
DRAWN BY:  
DATE:

**AMERICAN**  
Engineering

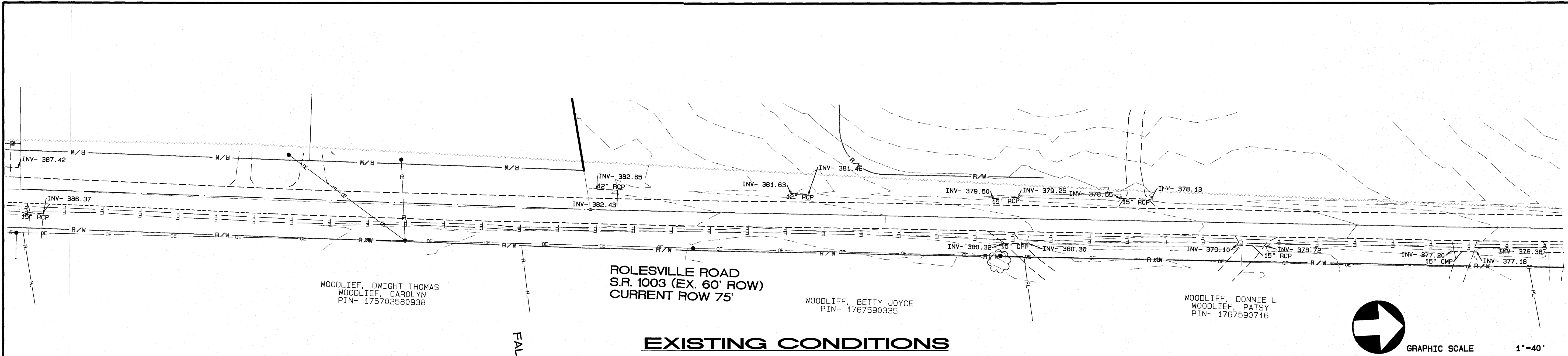
American Engineering Associates-Southeast, P.A.  
4020 Westchase Blvd., Suite 450  
Raleigh, NC 27607 919-469-1101

Professional Engineer Seal for John R. Harman, License No. 9810, State of North Carolina.

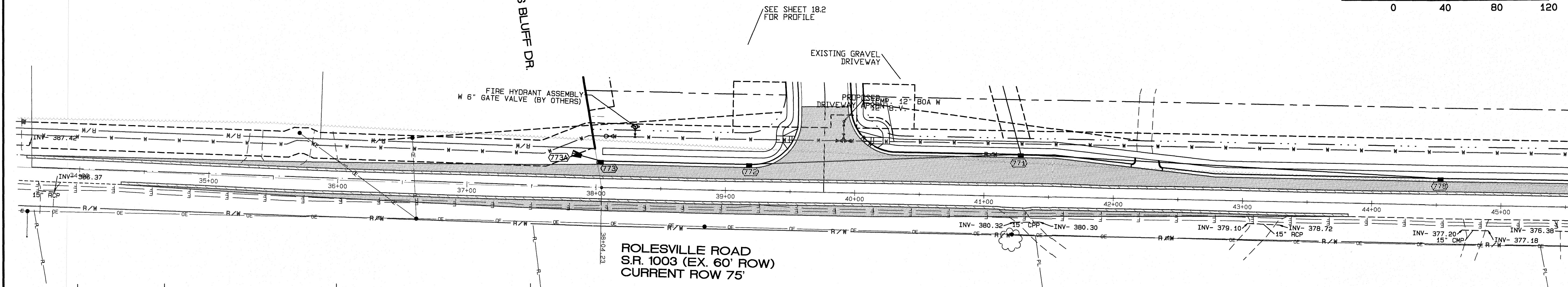
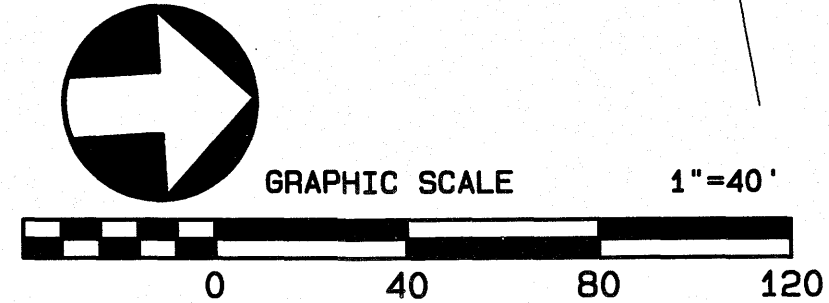
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SHEET NO.  
**18.0**

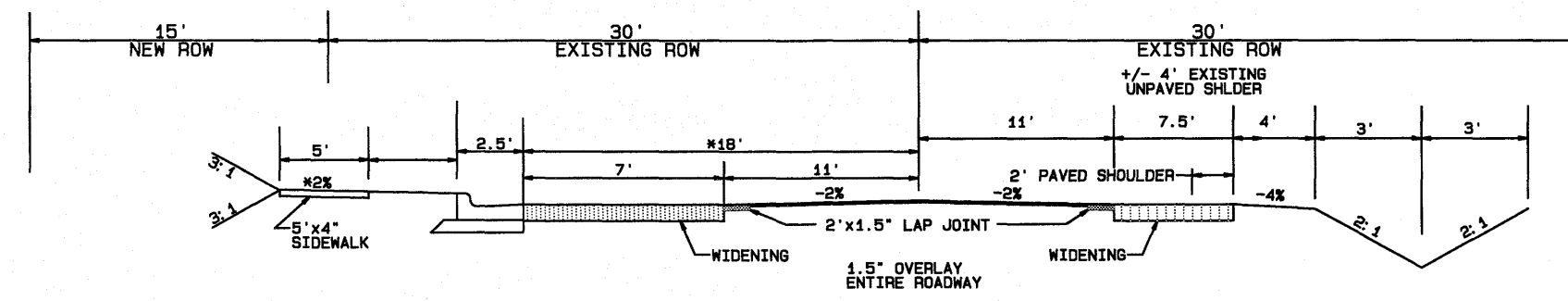




**EXISTING CONDITIONS**



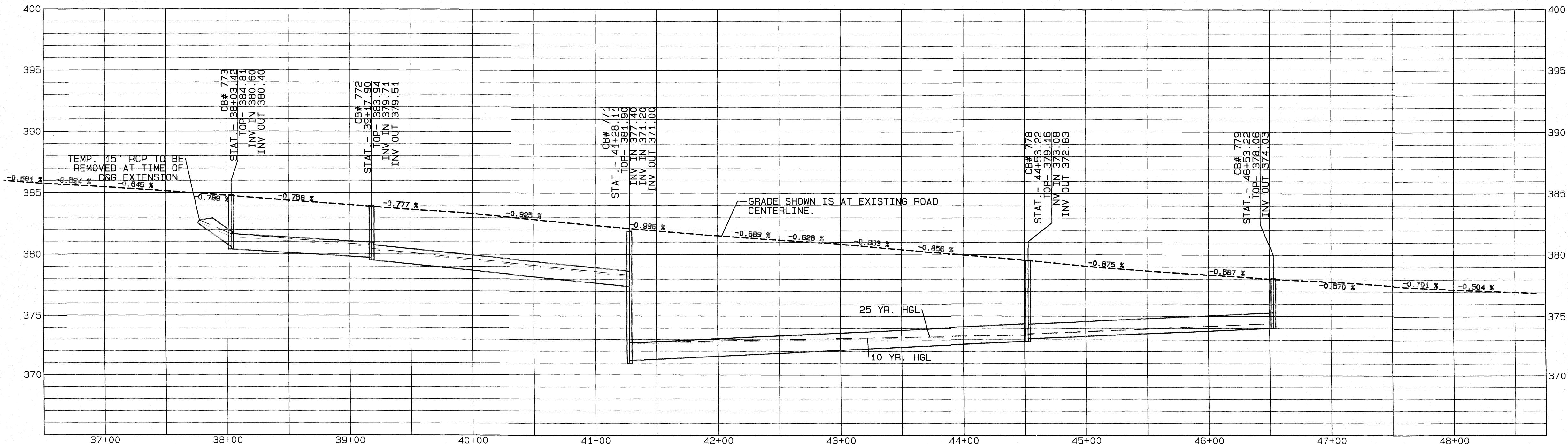
**IMPROVEMENTS**



PROPOSED PAVEMENT SLOPE TO MATCH EXISTING CROSS SLOPE  
ROLESVILLE RD.  
CROSS-SECTION (TYPICAL)

PAVEMENT DESIGN 6' OR LESS:	PAVEMENT DESIGN GREATER THAN 6':
3" S9.5C	3" S9.5C
4" I-19C	4" I-19C
5" B25.0C	10" ABC

- GENERAL NOTES:  
 1. PAVEMENT DESIGN TO BE DESIGNATED BY NCDOT ENCROACHMENT AGREEMENT OVERLAY OR LAP JOINT TO BE DETERMINED BY NCDOT ENCROACHMENT AGREEMENT.  
 2. CONTRACTOR IS RESPONSIBLE FOR CONTACTING 811 AT A MINIMUM OF 3 DAYS BEFORE STARTING TO DIG. 811 OR 1-800-632-4949.  
 \* WIDTH TO BE 30' WITH A RIGHT TURN LANE.



NO.	DATE	REVISION
1	06/10/21	ADDRESSING FOR CONSULTING COMMENTS
2	06/28/21	ADDRESSING NCDOT COMMENTS

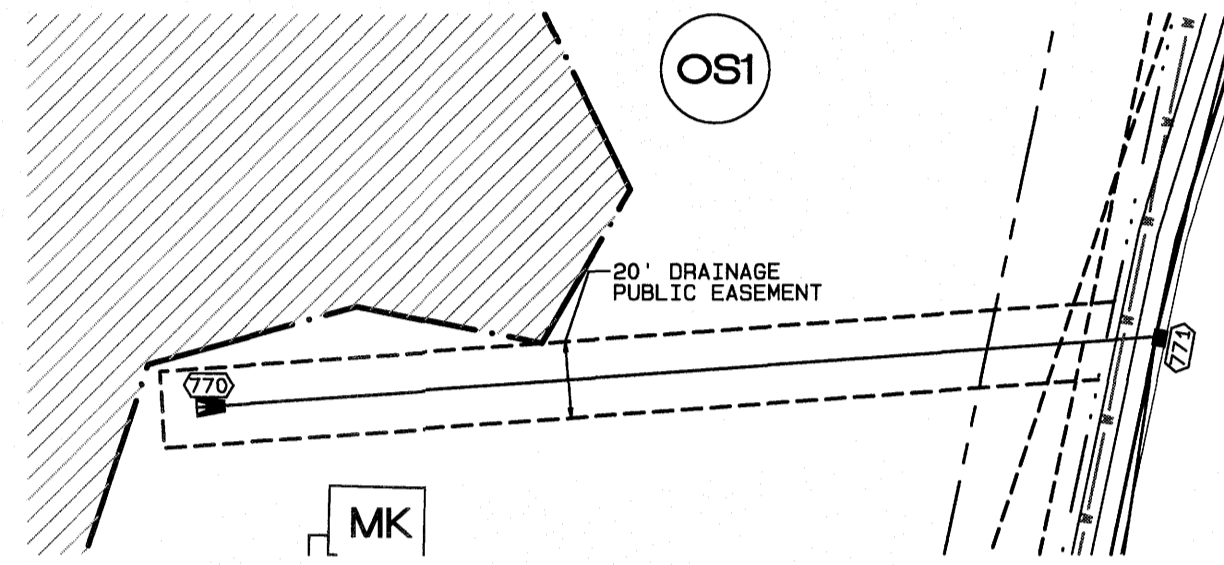
**ROLESVILLE ROAD NORTHERN SECTION EXISTING AND IMPROVEMENTS**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER:  
 CHECKED BY:  
 DRAWN BY:  
 DATE:

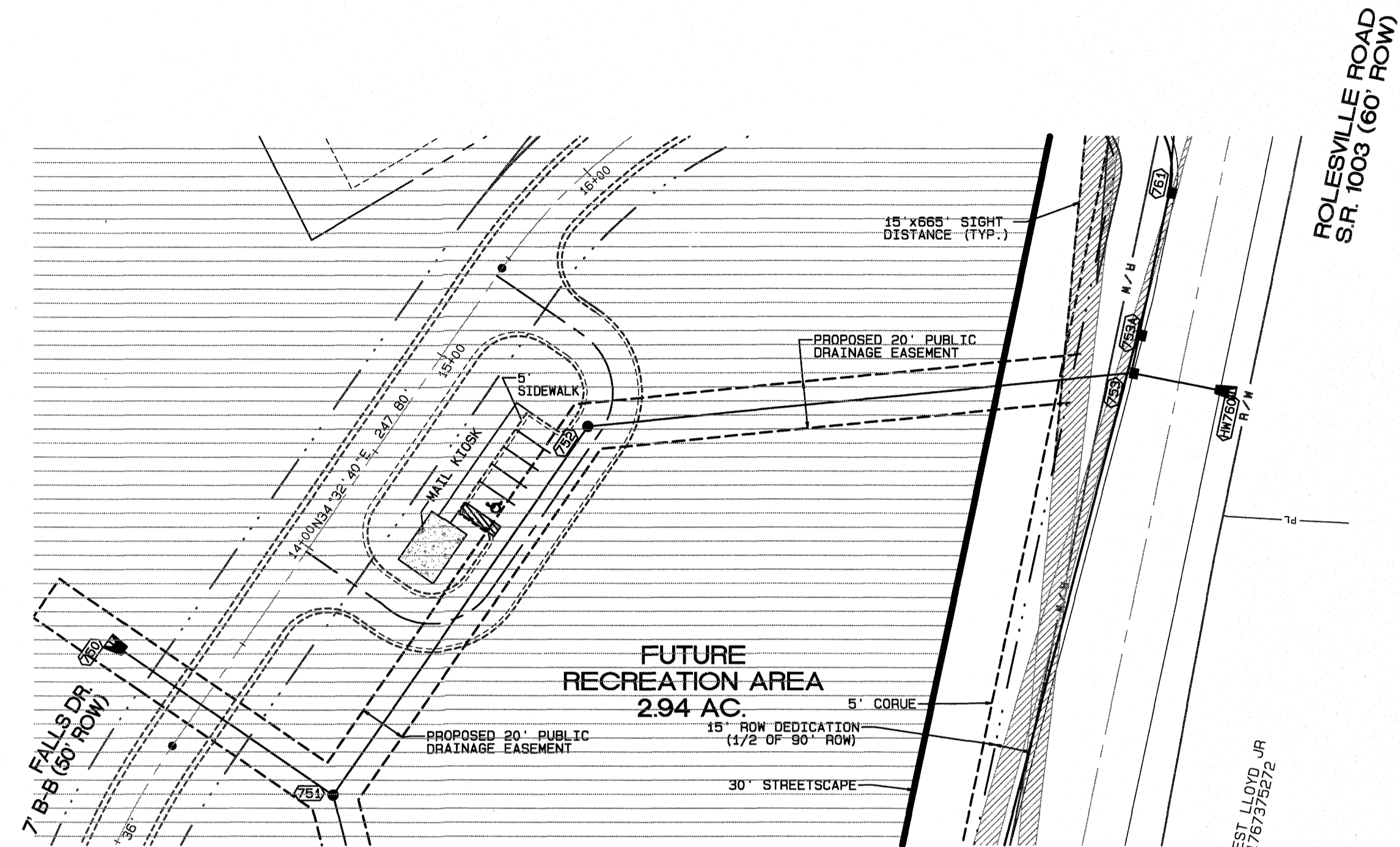
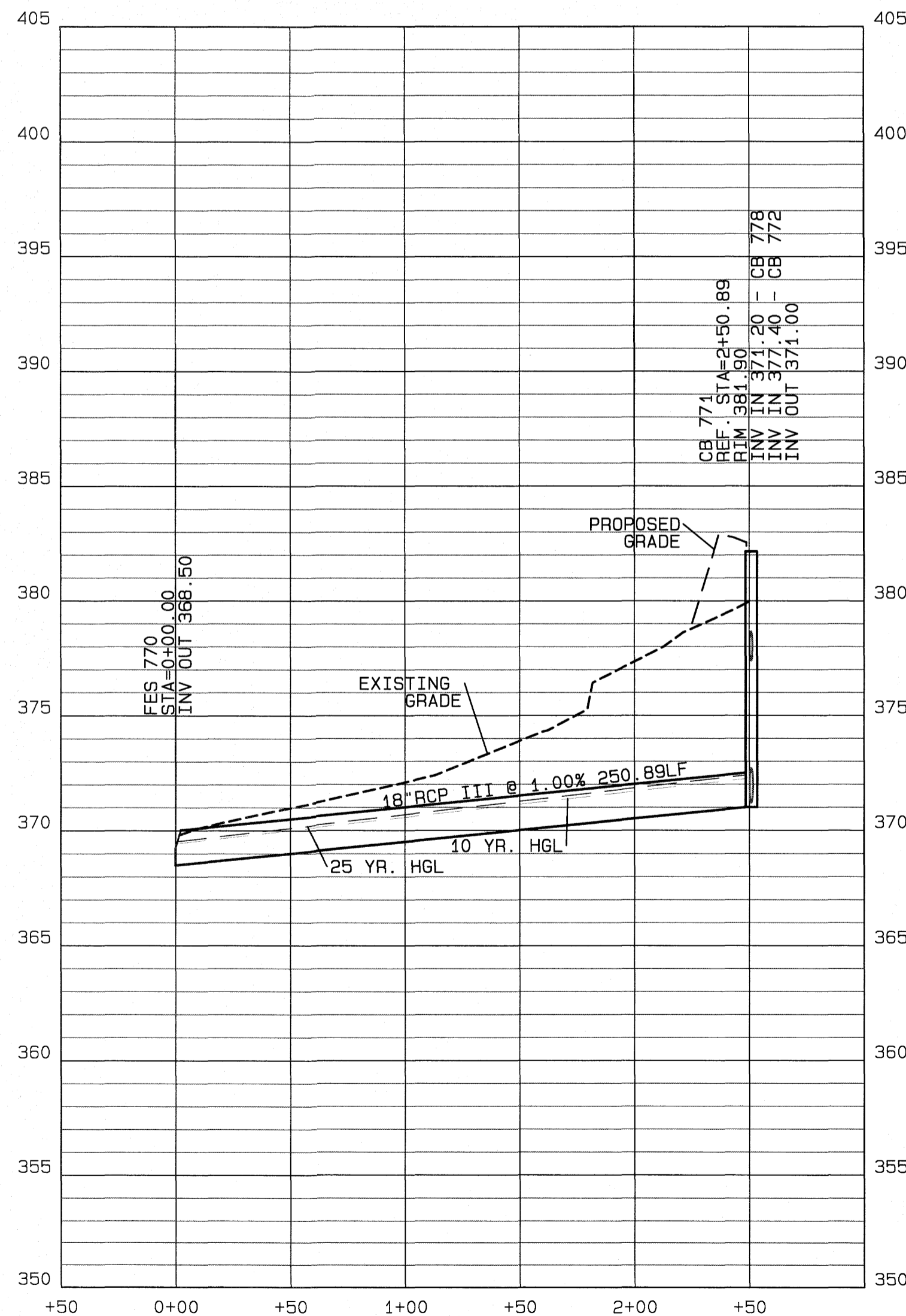
**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

Plot Date: 6/28/2021 Time: 8:09AM  
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 SHEET NO.  
**18.1**

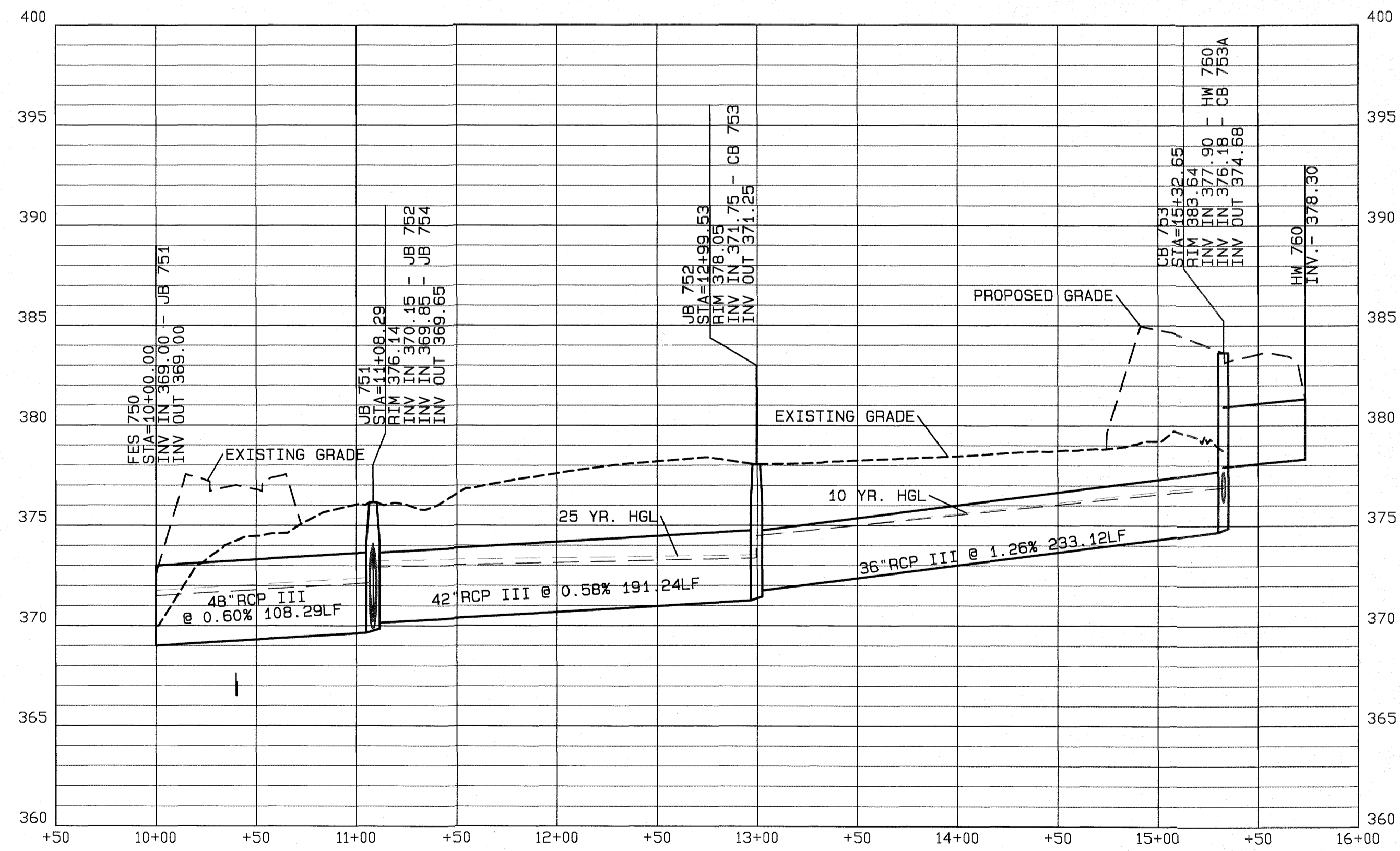




CB 771 TO FES 770



HW 760 TO JB 750

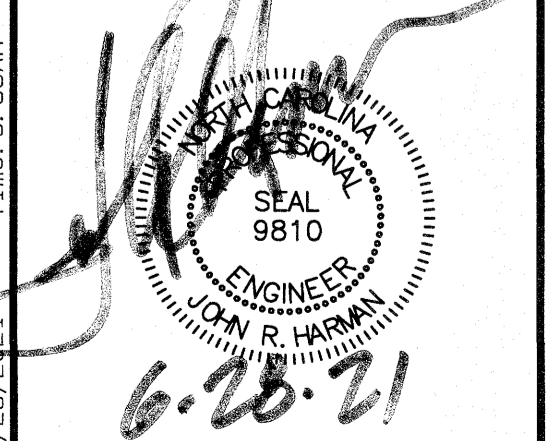


No.	DATE	REVISION	BY/CHK
1	05/10/21	ADDRESSING FOR CONSULTING COMMENTS	BAH/ART
2	06/28/21	ADDRESSING NCDOT COMMENTS	BAH/ART

**ROLESVILLE ROAD OFF-SITE STORM PLAN AND PROFILES**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER:  
 CHECKED BY:  
 DRAWN BY:  
 DATE:

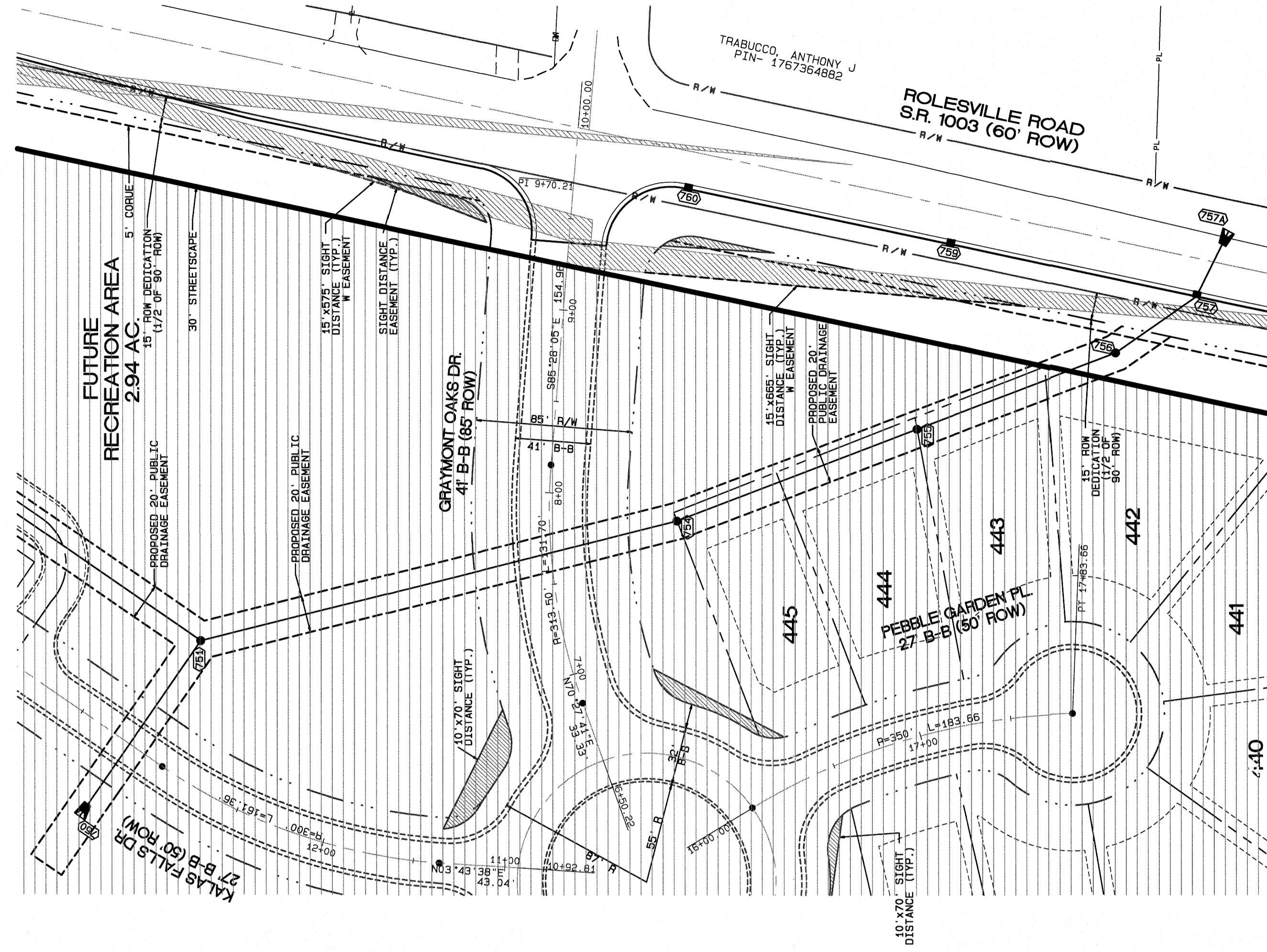
**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101



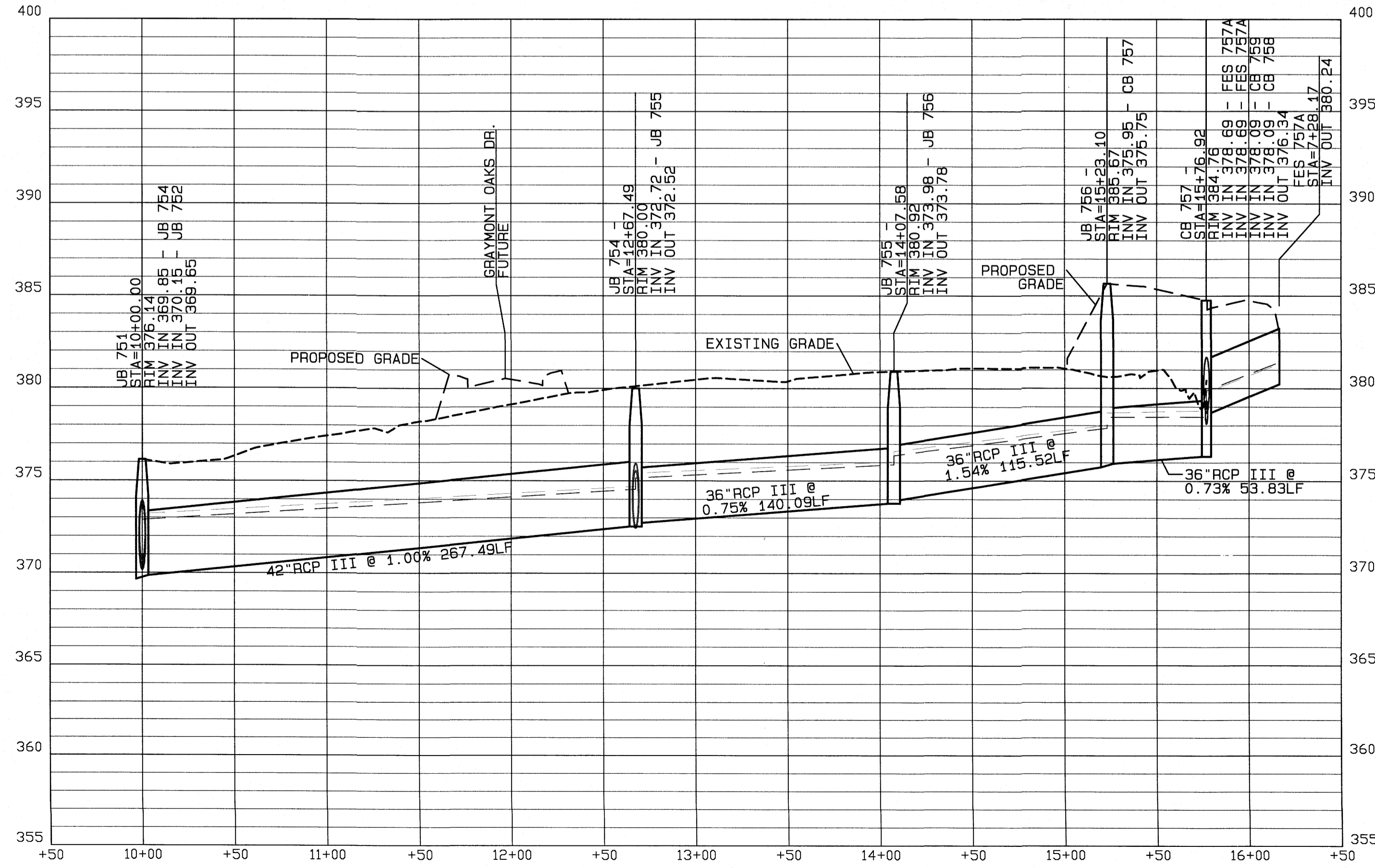
SHEET NO.  
**18.2**

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FES 757 TO FES 750



Plot Date: 6/29/2021 Time: 7:54AM FILE: Z:\Jobs\9500\WackIns\_Property\Wmp\Bass\_Map\Kalis Falls Base Phase 1.dwg

No.	DATE	REVISION	DIV/CHK
1	06/29/21	ADDRESSING FOR CONSULTING COMMENTS	BAH/ARI
2	06/29/21	ADDRESSING INDENT COMMENTS	

**ROLESVILLE ROAD OFF-SITE STORM PLAN AND PROFILES**  
 FOR  
**KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

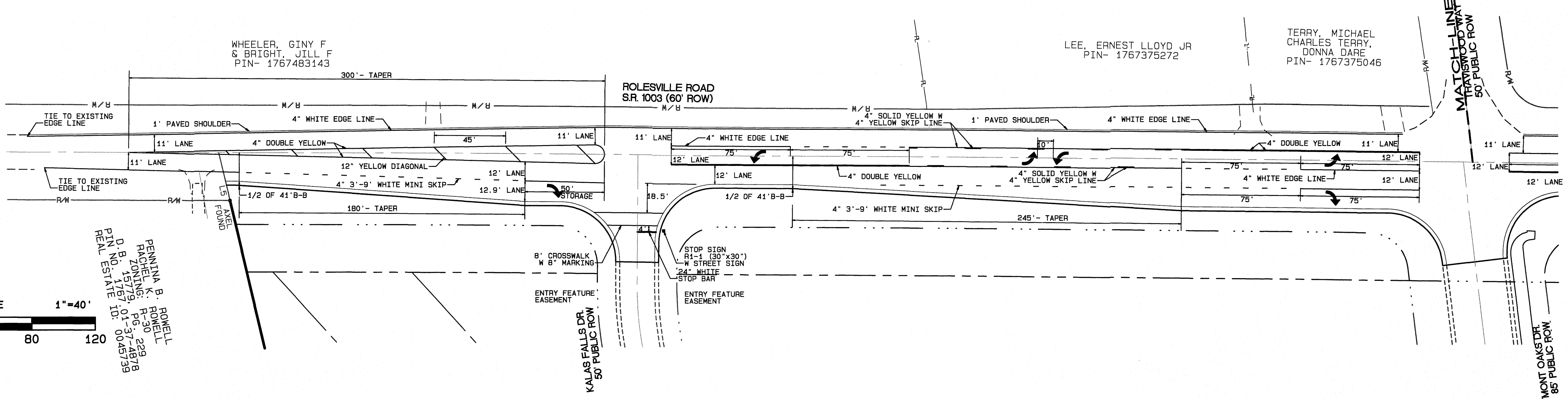
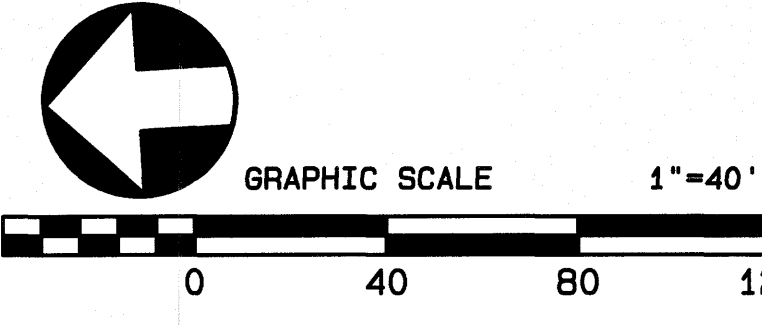
JOB NUMBER:  
 CHECKED BY:  
 DRAWN BY:  
 DATE:

**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

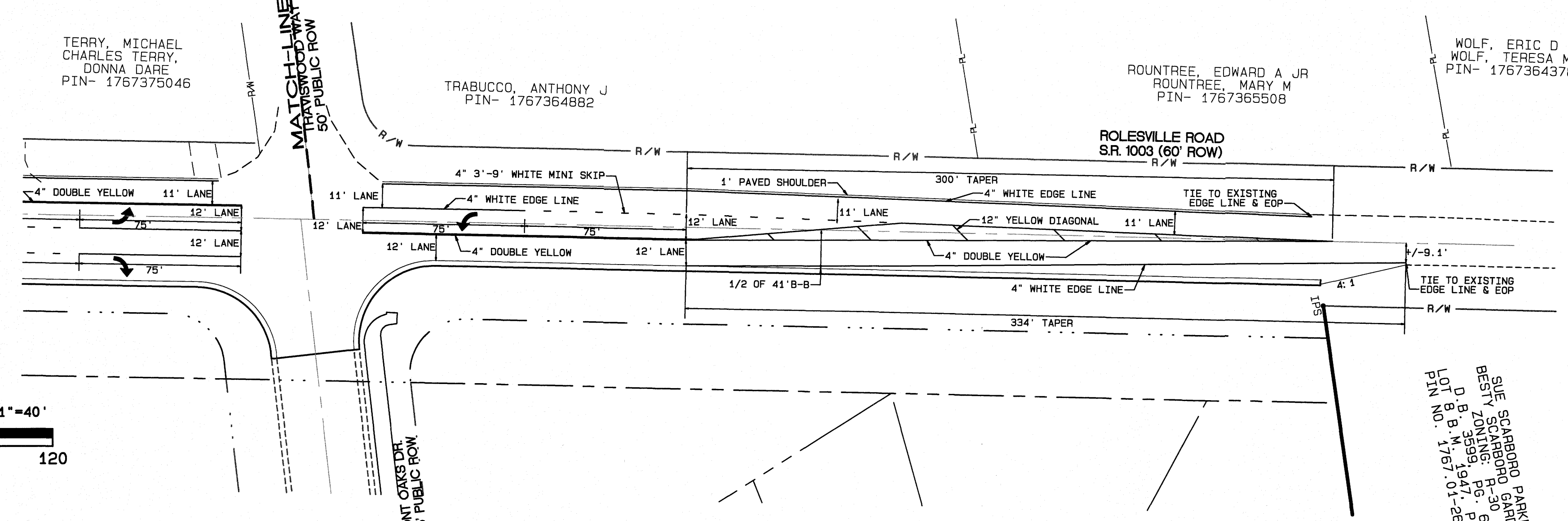
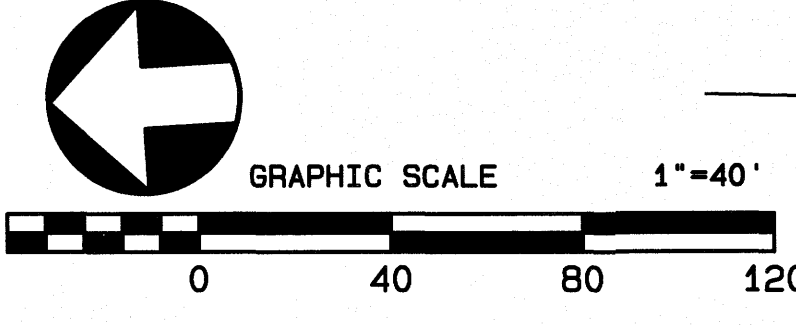
*John R. Harney*  
 SEAL 9810  
 ENGINEER  
 JOHN R. HARNEY  
 6.28.21

SHEET NO.  
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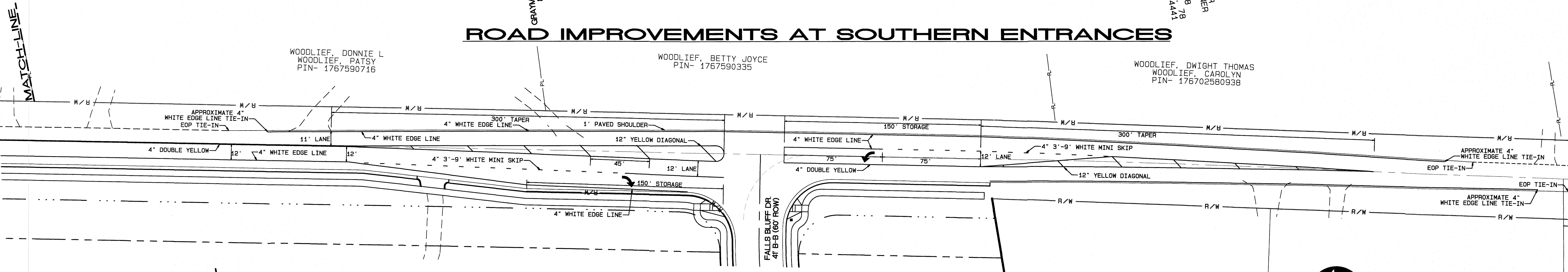




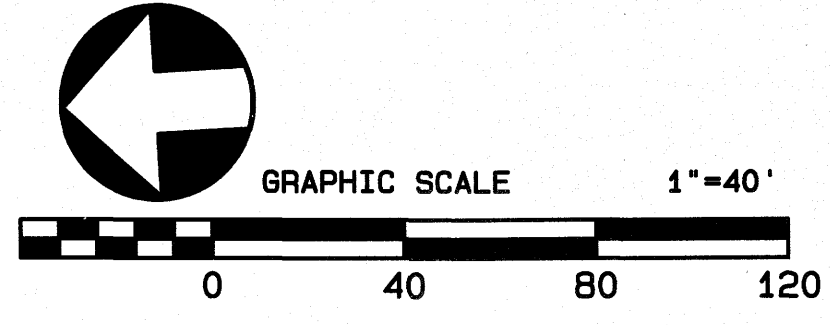
**ROAD IMPROVEMENTS AT SOUTHERN ENTRANCES**



**ROAD IMPROVEMENTS AT SOUTHERN ENTRANCES**



**ROAD IMPROVEMENTS AT NORTHERN ENTRANCES**



NO.	DATE	REVISION	ADDRESSING/NOT. COMMENTS
1	06/28/21		

**ROLESVILLE ROAD IMPROVEMENTS**  
 FOR **KALAS FALLS**  
 SITUATED AT  
**1832 ROLESVILLE ROAD**  
 WAKE COUNTY, NORTH CAROLINA  
 FIRM # C-3881

JOB NUMBER:
CHECKED BY:
DRAWN BY:
DATE:

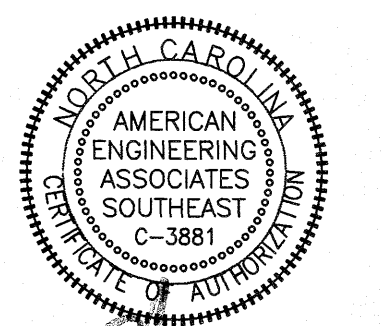
**AMERICAN Engineering**  
 American Engineering Associates-Southeast, P.A.  
 4020 Westchase Blvd., Suite 450  
 Raleigh, NC 27607 919-469-1101

Plot Date: 6/28/2021 Time: 8:26AM FILE: Z:\Jobs\9800\Matkins\_Property.dwg Base: Map\Kalas Falls Base Phase 1.dwg









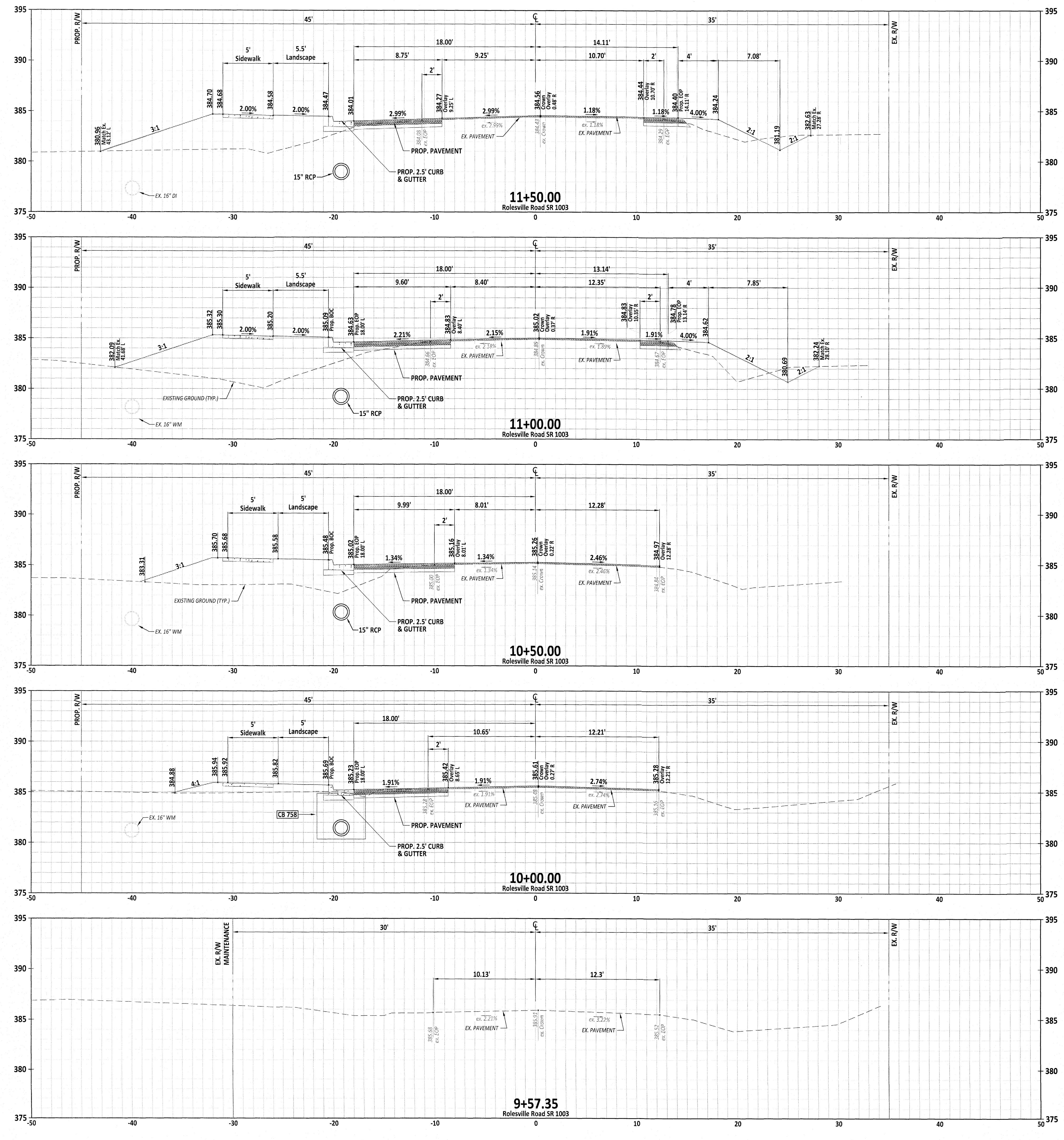
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 6-15-21

NO.	DATE	REVISION
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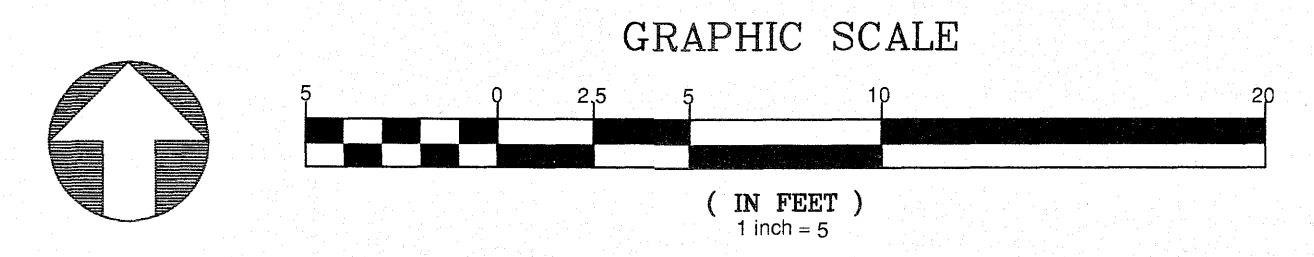
**STIPULATION FOR REUSE**  
 THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS  
 PHASE I  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC**

JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY: EDS  
 DATE: 9/19/2019  
 SHEET TITLE:  
**CROSS-SECTION  
 STA:  
 9+57.35 - 11+50**  
 SHEET NO.:  
**XI**



**NCDOT PAVEMENT SCHEDULE**  
 - 3" S9.5C  
 - 4" I19.0C  
 - 10" CABG (OR 5" B25.0C IF LESS THAN 6 FEET WIDE WIDENING)



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 Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.  
 City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer















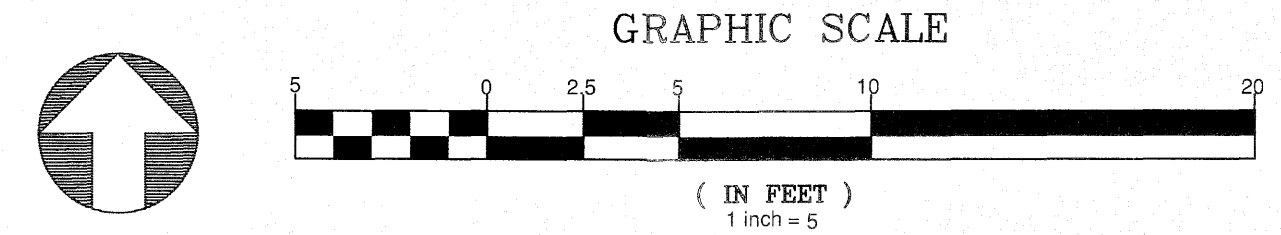
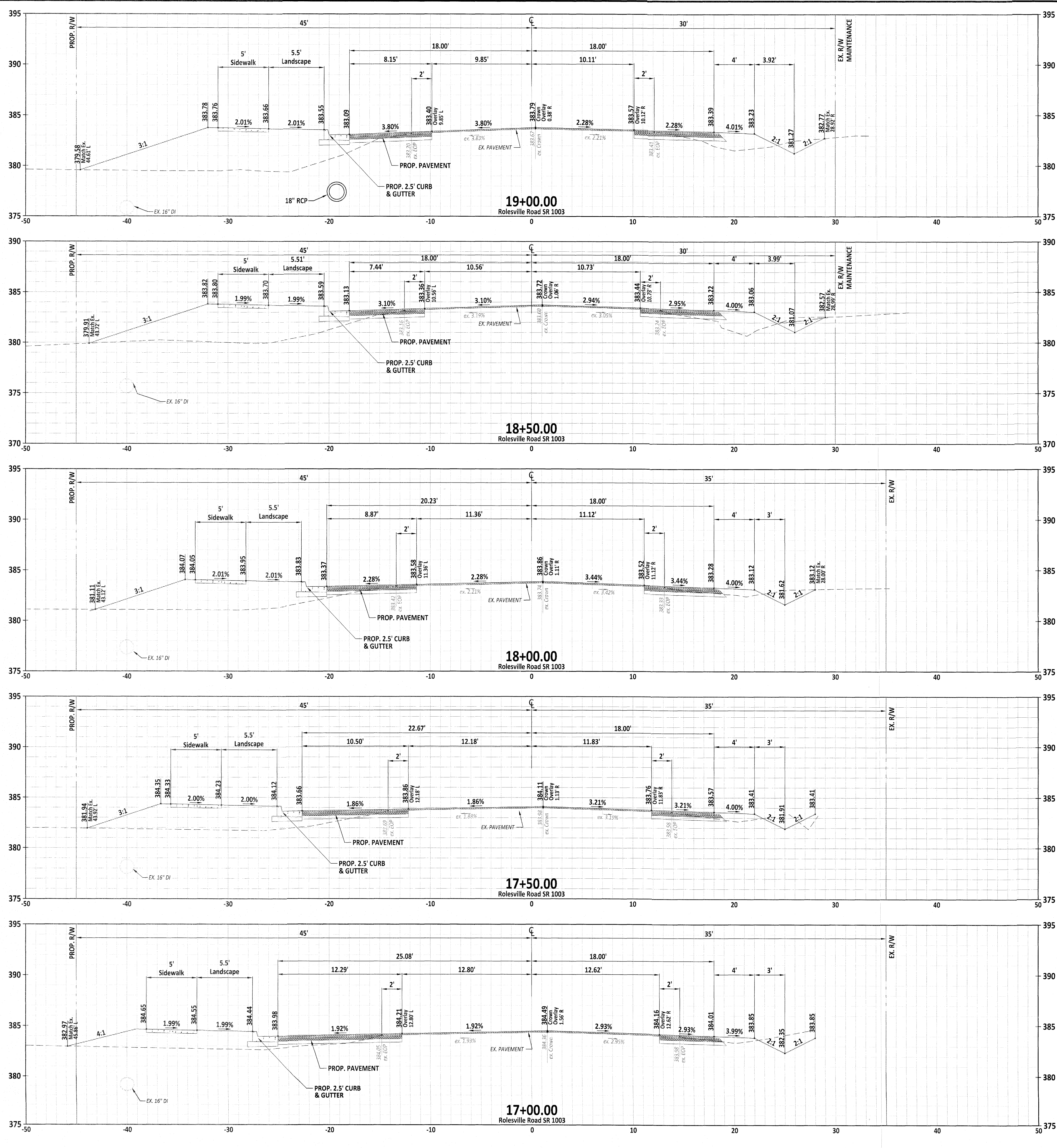
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04/21

NO.	DATE	REVISION

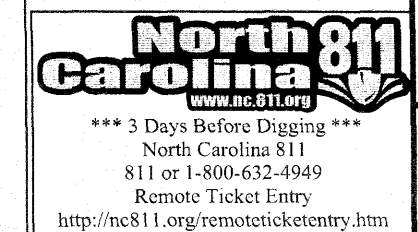
**STIPULATION FOR REUSE**  
THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS  
PHASE 1  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC**

JOB NUMBER: 9900  
CHECKED BY: EDS  
DRAWN BY: EDS  
DATE: 9/19/2019  
SHEET TITLE:  
**CROSS-SECTION  
STA:  
17+00 - 19+00**  
SHEET NO.: X4



**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**  
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City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer \_\_\_\_\_







*[Handwritten Signature]*  
9.14.20

NO.	DATE	REVISION

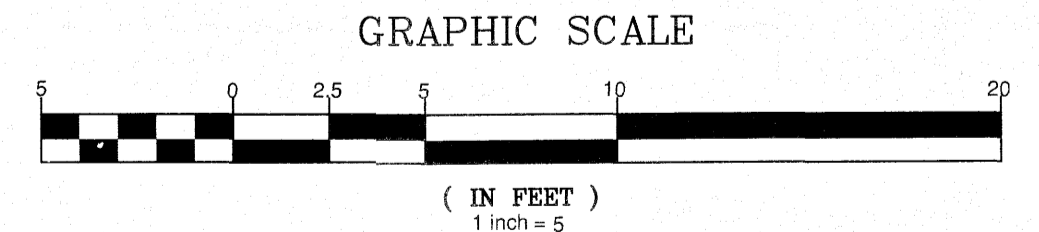
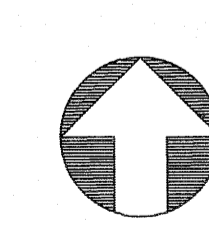
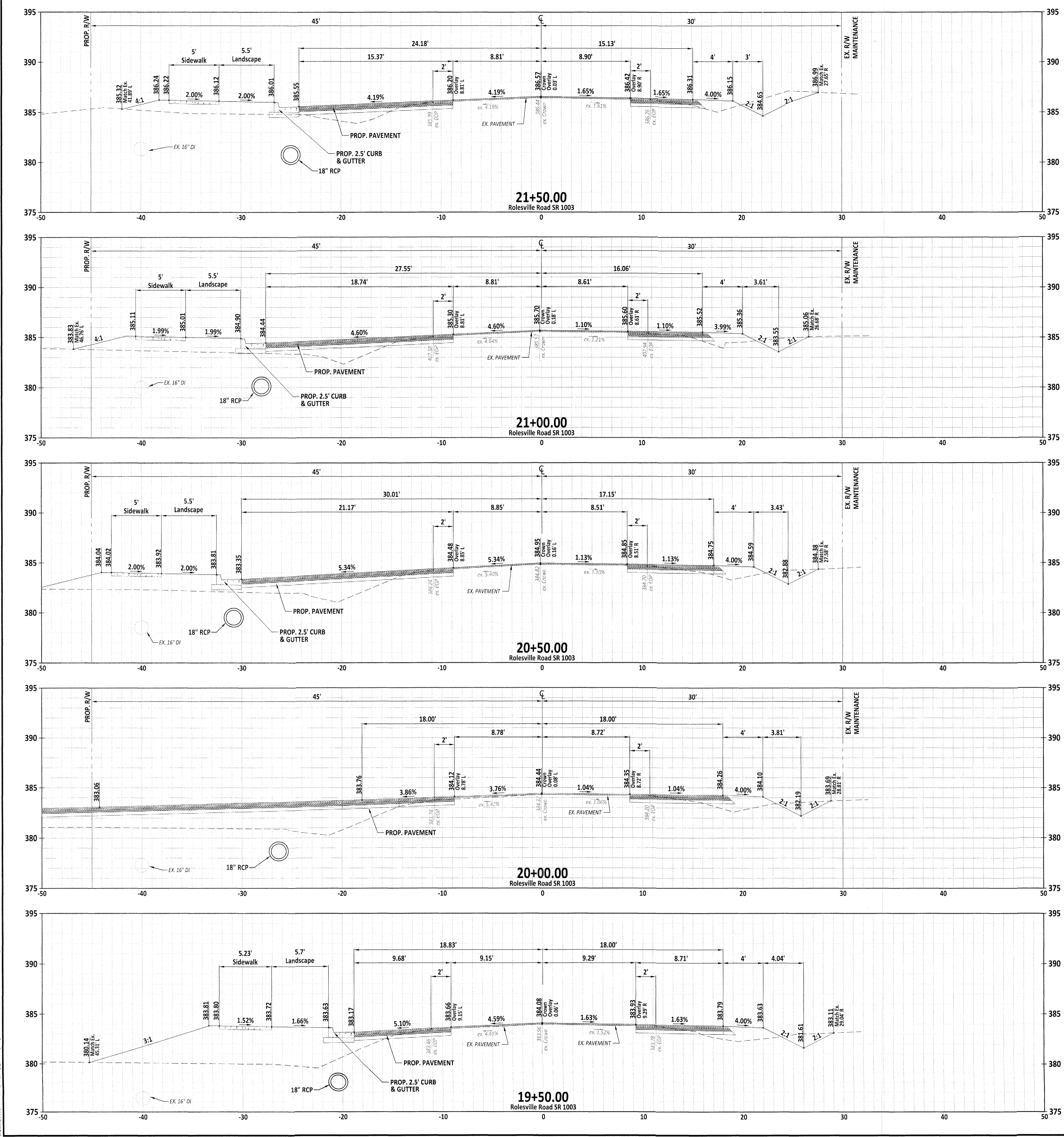
**STIPULATION FOR REUSE**  
THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS  
PHASE 1  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC**

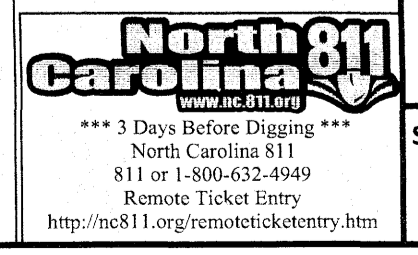
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CHECKED BY:  
DRAWN BY: EDS  
DATE: 9/19/2019

SHEET TITLE:  
**CROSS-SECTION  
STA:  
19+50 - 21+50**

SHEET NO.:  
**X5**



CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION  
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City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer \_\_\_\_\_



2:\Users\jw\Working\Projects\Phase 1\Working\Drawings\Phase 1\Rolesville Road Construction.dwg  
 9/14/2019

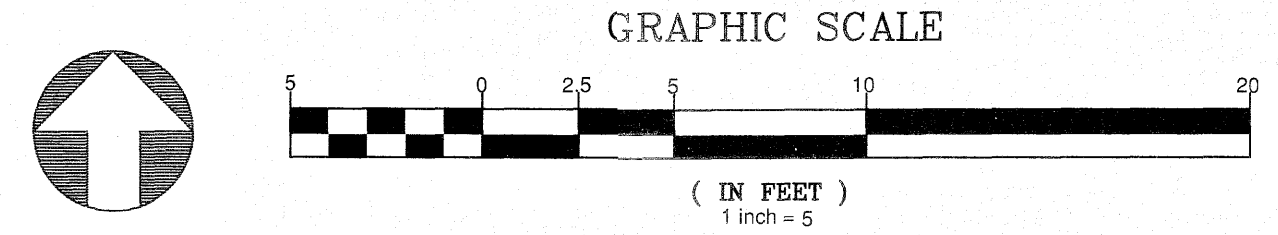
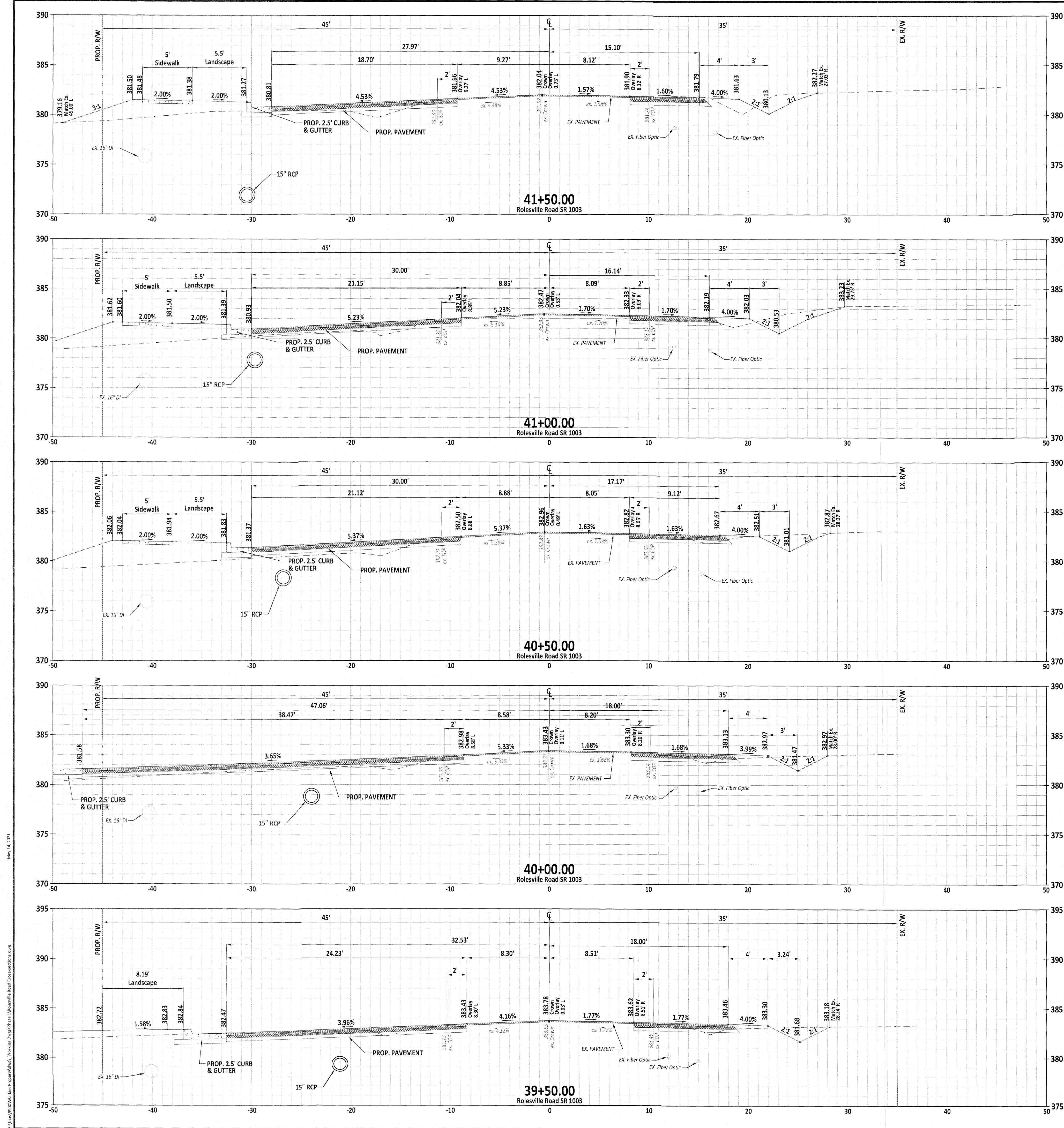












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City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer



*Handwritten notes:*  
 5/14/21

NO.	DATE	REVISION

STIPULATION FOR REUSE  
 THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS**  
**PHASE 1**  
**1832 ROLESVILLE ROAD**  
**WAKE COUNTY, NC**

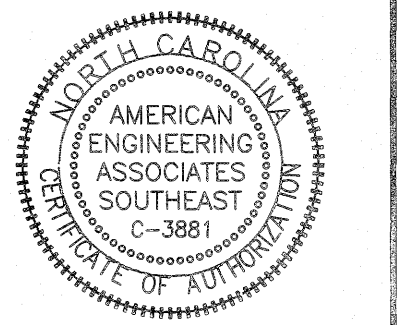
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 CHECKED BY:  
 DRAWN BY: EDS  
 DATE: 9/19/2019  
 SHEET TITLE:  
**CROSS-SECTION**  
 STA:  
 39+50 - 41+50  
 SHEET NO.:  
 X8

2:\sub\9900\Wakalans Phase 1\Drawings\9900\Rolesville Road Cross-section.dwg  
 May 14, 2021









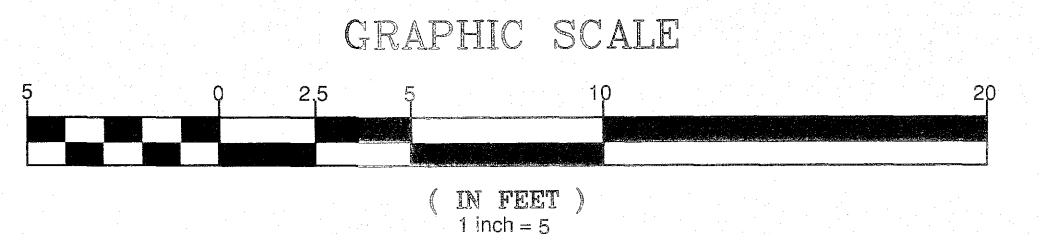
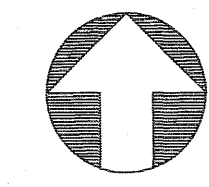
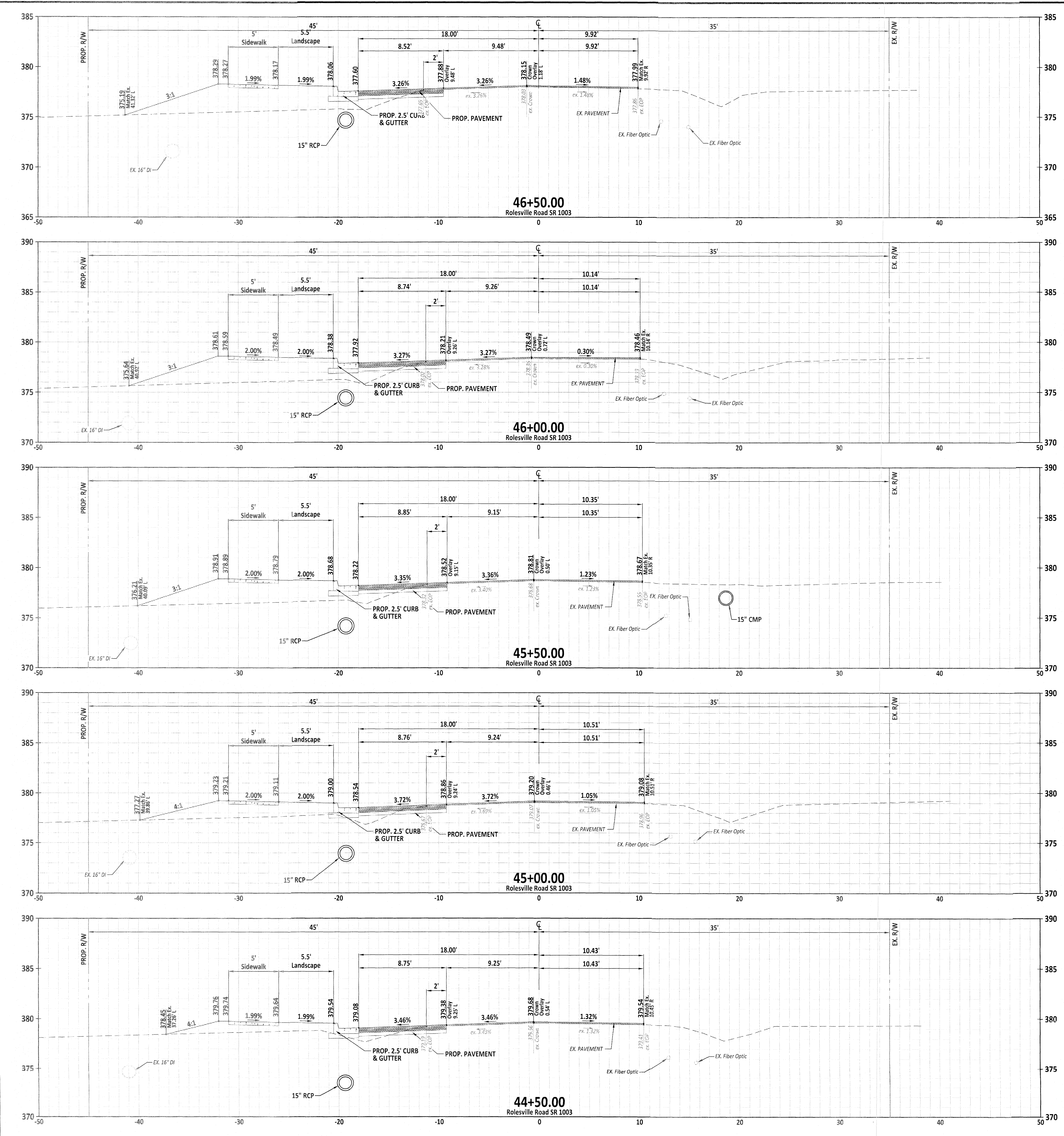
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NO.	DATE	REVISION

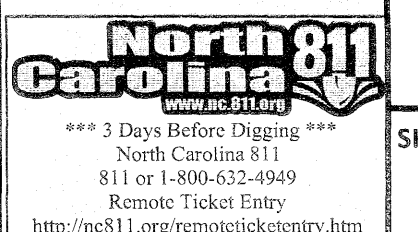
**STIPULATION FOR REUSE**  
THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS  
PHASE 1  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC**

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY: EDS  
DATE: 9/19/2019  
SHEET TITLE:  
**CROSS-SECTION**  
STA: 44+50 - 46+50  
SHEET NO.: X10



**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**  
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City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer

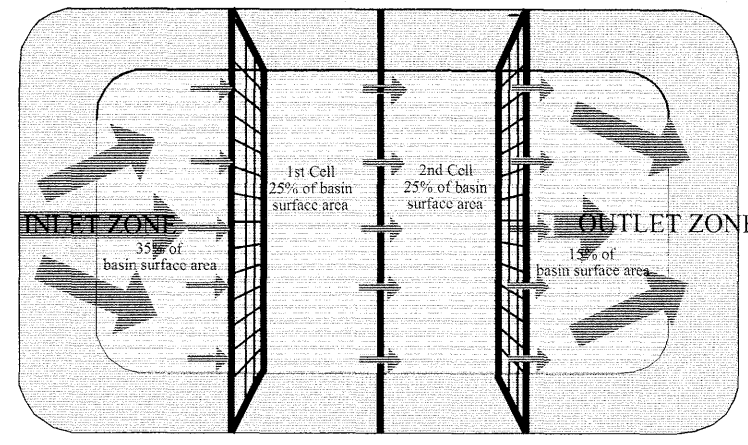


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 Date: 9/20/19





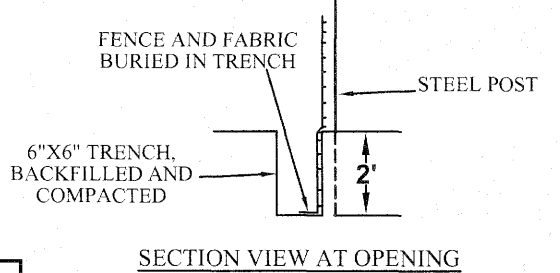




- NOTES:
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
  2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
  3. PROVIDE 3 BAFFLES (USE TWO IF LESS THAN 20 FEET IN LENGTH); PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
  4. BAFFLE SHALL BE 700 GPM COR EROSION BLANKET.
  5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS.
  6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL.

PLAN VIEW

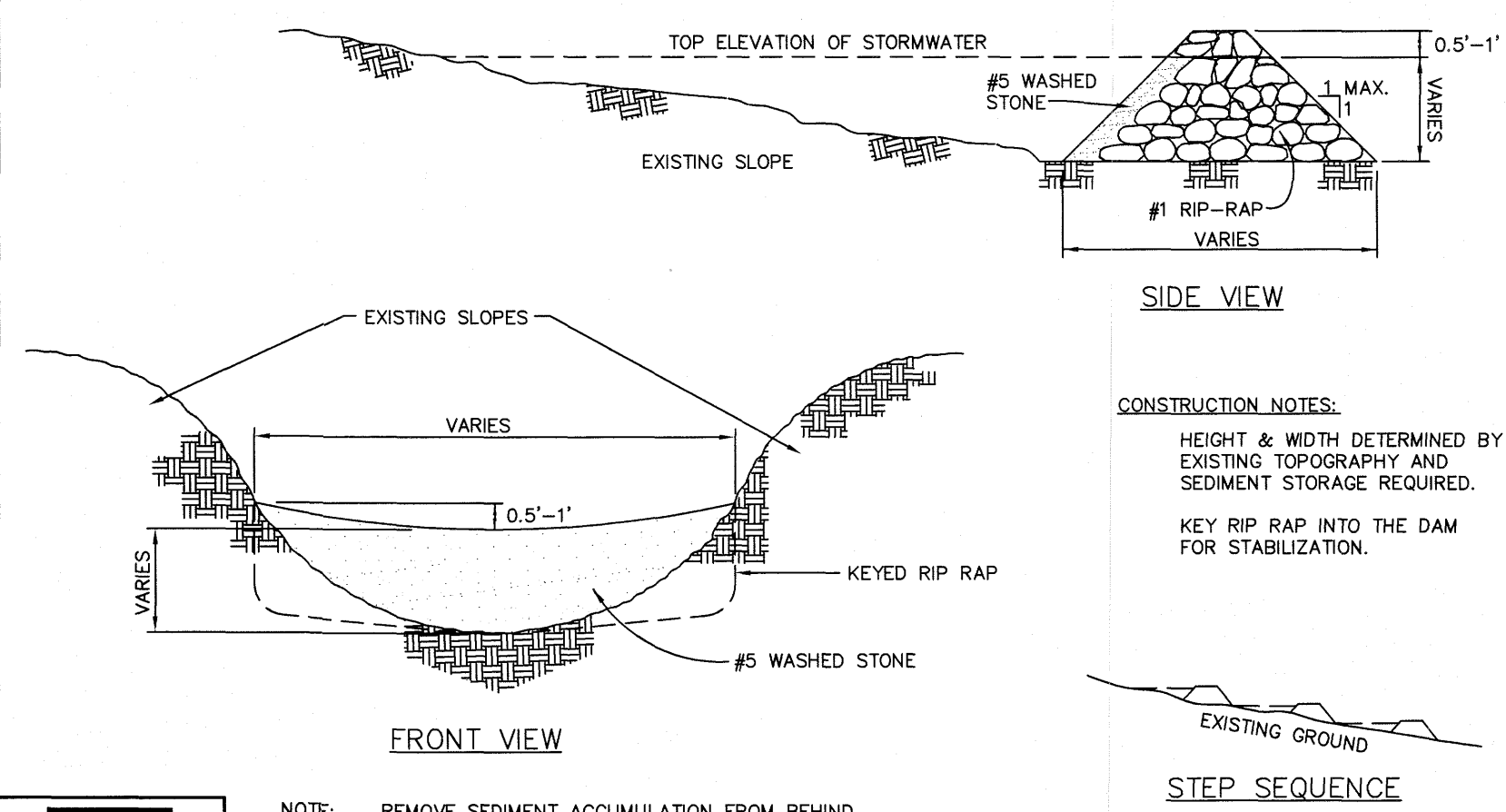
CROSS SECTION



SECTION VIEW AT OPENING

STANDARD BAFFLES DETAIL

EFFECTIVE: 01/31/08



SIDE VIEW

FRONT VIEW

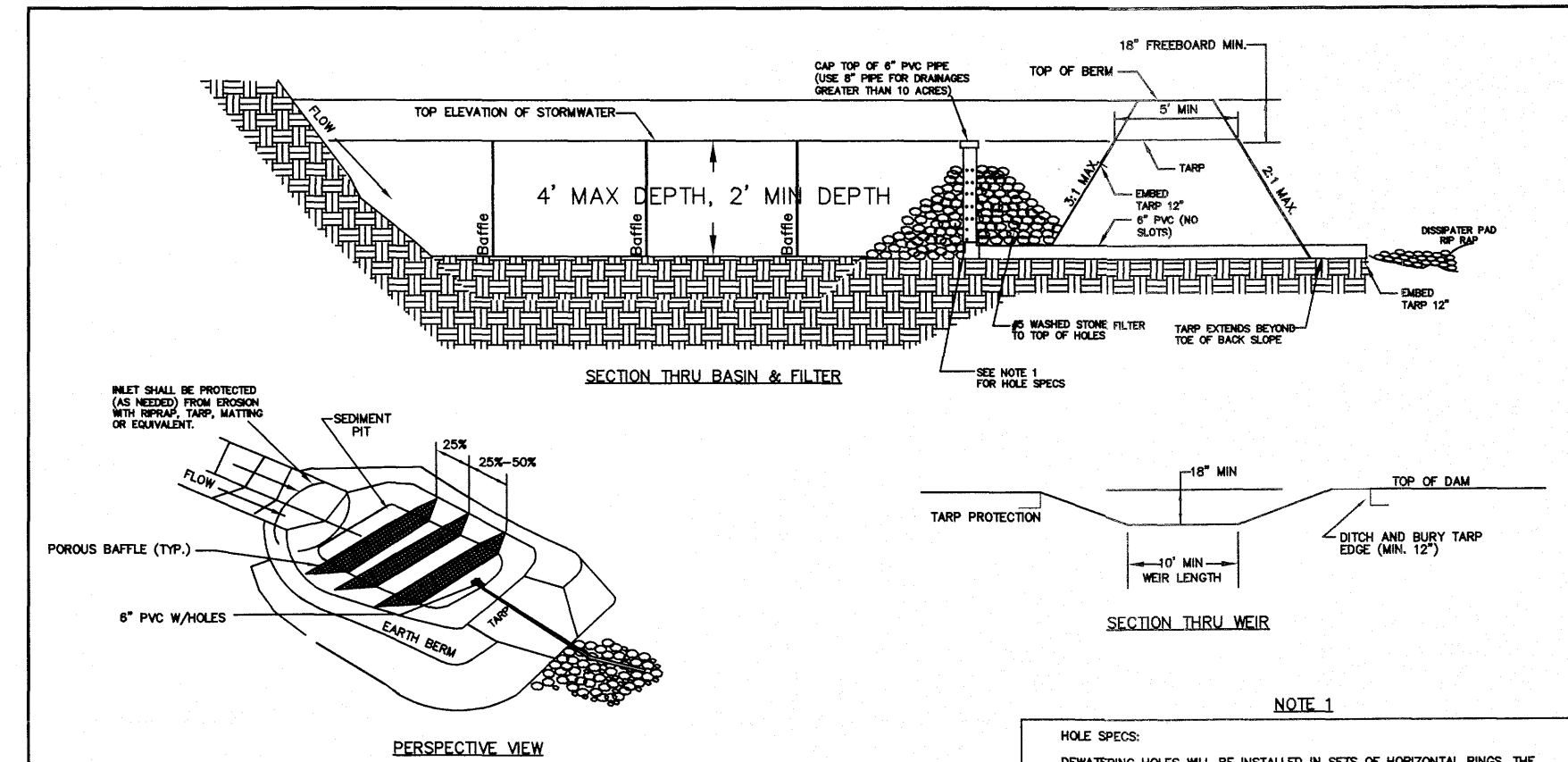
STEP SEQUENCE

- CONSTRUCTION NOTES:
- HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
- KEY RIP RAP INTO THE DAM FOR STABILIZATION.

- NOTE: REMOVE SEDIMENT ACCUMULATION FROM BEHIND CHECK DAMS TO PREVENT DAMAGE TO CHANNEL VEGETATION. FLOW SHOULD BE MAINTAINED THROUGH THE DAM.

STANDARD CHECK DAM

EFFECTIVE: 01/31/08



PERSPECTIVE VIEW

SECTION THRU BASIN & FILTER

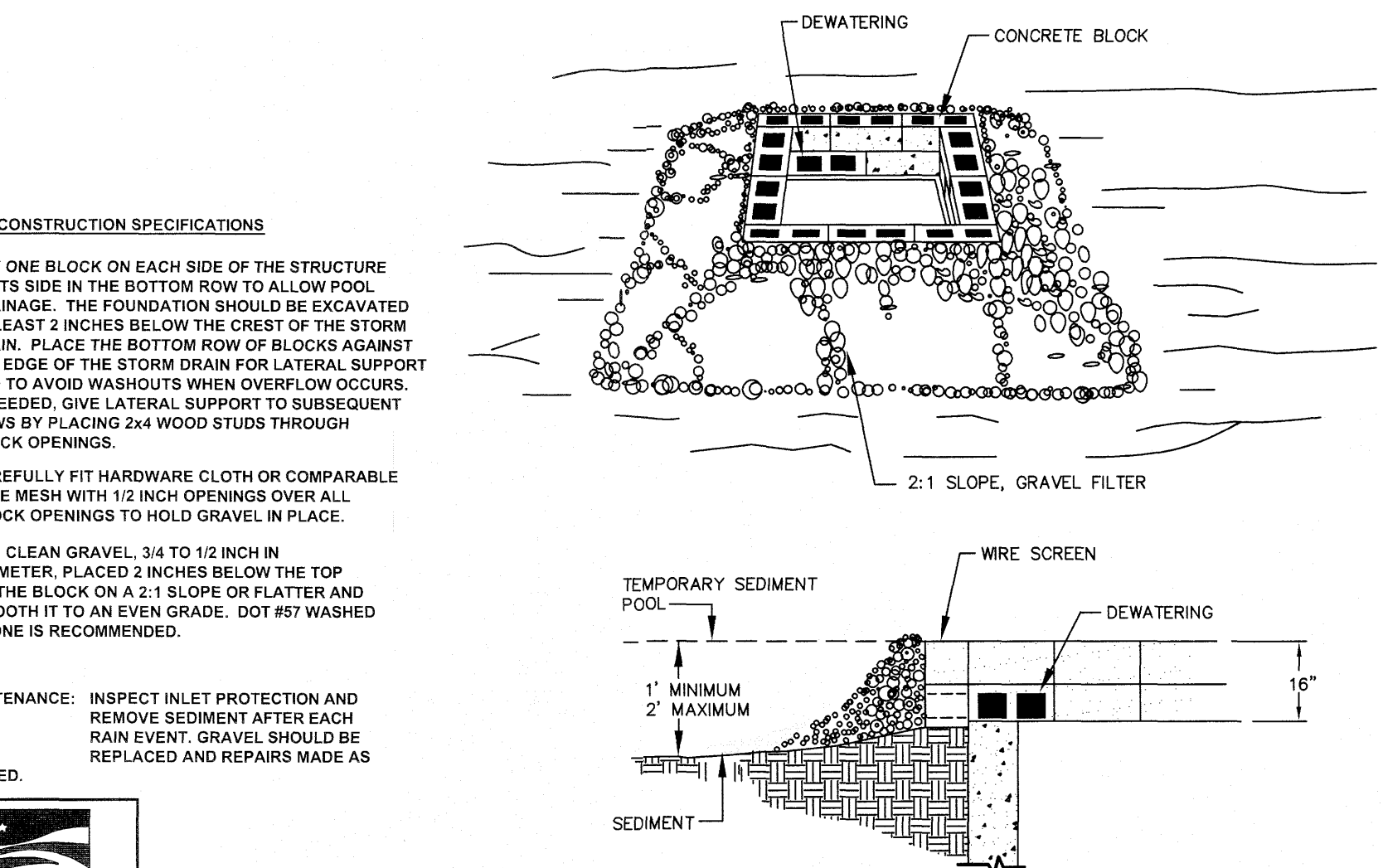
NOTE 1

- GENERAL NOTES:
1. DRAW DOWN RISER & BARREL SHALL BE 4" DIA. 40 PVC WITH CLEANOUT COCK AND 3/4" HOLES. SEE NOTE 1 FOR NUMBER AND SPACING OF HOLES.
  2. THE TAMP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TAMP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TAMPS ARE TO BE USED, THEN TAMP SHALL BE OVERLAPPED AT LEAST 12". THE UPSTREAM 12" TAMP SHALL OVERLAP THE DOWNSTREAM TAMP. THE TAMP SHALL BE 2" GALV. HEAVY DUTY GALV. TANGLED OR EQUIVALENT FOR 2". MAINTENANCE: SEDIMENT TO BE REMOVED AND PROPERLY DEPOSED BY WATER BASK IF NOT FULL. GRAVEL FILTER AROUND RISER SHOULD BE REPLACED AS NEEDED TO ENSURE DEWATERING.

- HOLE SPACING:
- DEWATERING HOLES WILL BE INSTALLED IN SETS OF HORIZONTAL RINGS. THE FIRST RING OF HOLES WILL BE 8" FROM THE BOTTOM OF THE RISER. THE RING WILL CONTINUE UP THE RISER IN INTERVALS OF 3" HOLES. HOLES WITH 3" DIA. HOLES WILL BE SPACED EQUALLY AROUND THE RISER. THE NUMBER OF HOLES PER RING WILL EQUAL TO THE DRAINAGE AREA.
- DAMAGE:
- A BASIN DRAINING 2.0 ACRES SHOULD HAVE 2 HOLES PER RING EVERY 3" HOLES ON THE RISER. THE FIRST RING (2 HOLES) WILL BE SET 6" FROM THE BOTTOM OF THE RISER.
- NOTE: ROUND DRAINAGE AREA TO THE NEAREST WHOLE NUMBER TO DETERMINE NUMBER OF HOLES.

STANDARD CUSTOM BASIN

EFFECTIVE: 01/31/08



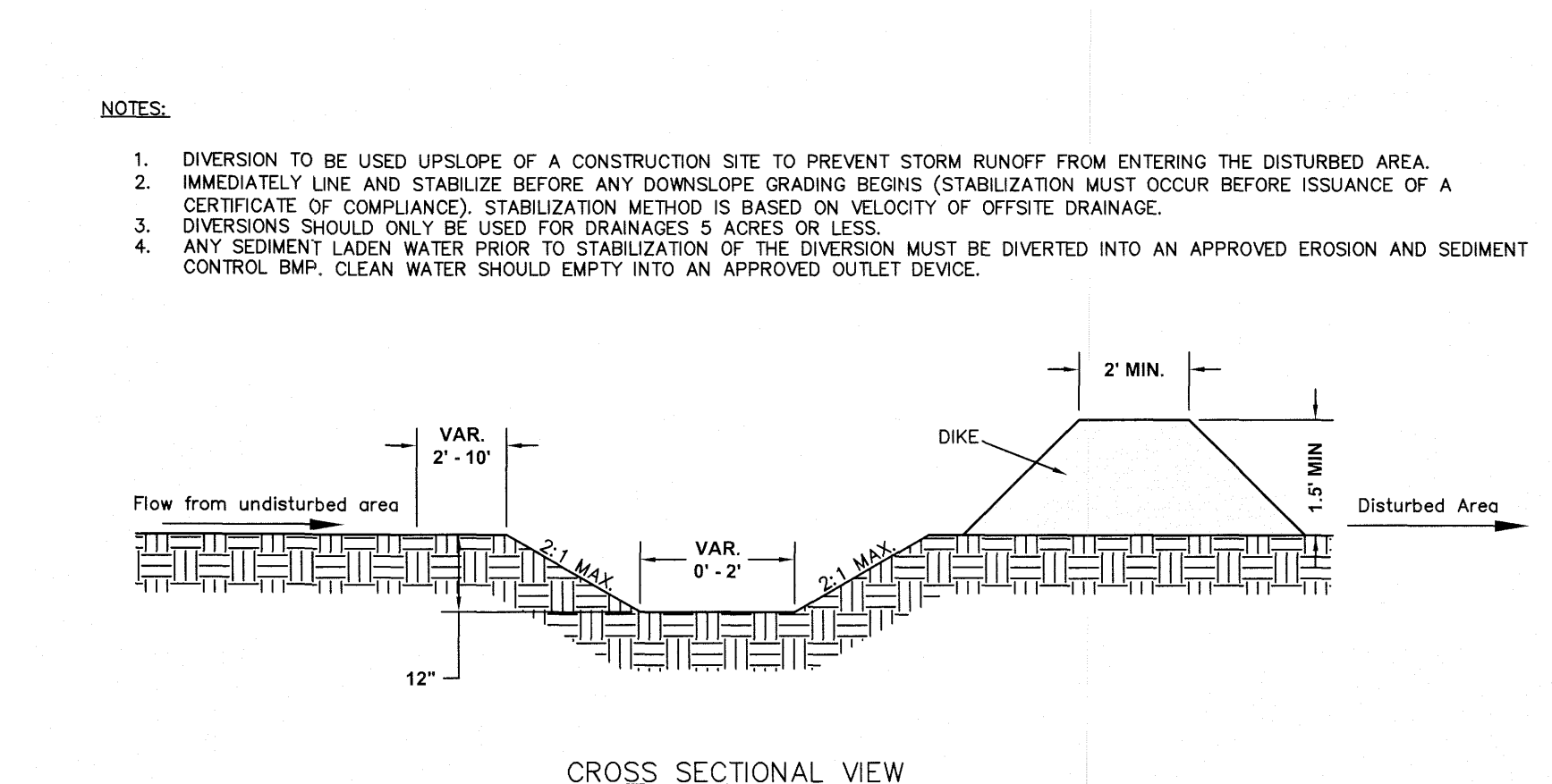
CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE IN THE BOTTOM ROW TO ALLOW POOL DRAINAGE. THE FOUNDATION SHOULD BE EXCAVATED AT LEAST 2 INCHES BELOW THE CREST OF THE STORM DRAIN. PLACE THE BOTTOM ROW OF BLOCKS AGAINST THE EDGE OF THE STORM DRAIN FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS. IF NEEDED, GIVE LATERAL SUPPORT TO SUBSEQUENT ROWS BY PLACING 2x4 WOOD STUDS THROUGH BLOCK OPENINGS.
2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2 INCH OPENINGS OVER ALL BLOCK OPENINGS TO HOLD GRAVEL IN PLACE.
3. USE CLEAN GRAVEL, 3/4 TO 1 1/2 INCH IN DIAMETER, PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE. DOT #5 WASHED STONE IS RECOMMENDED.

- MAINTENANCE: INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.

STANDARD BLOCK & GRAVEL DROP INLET PROTECTION

EFFECTIVE: 01/31/08



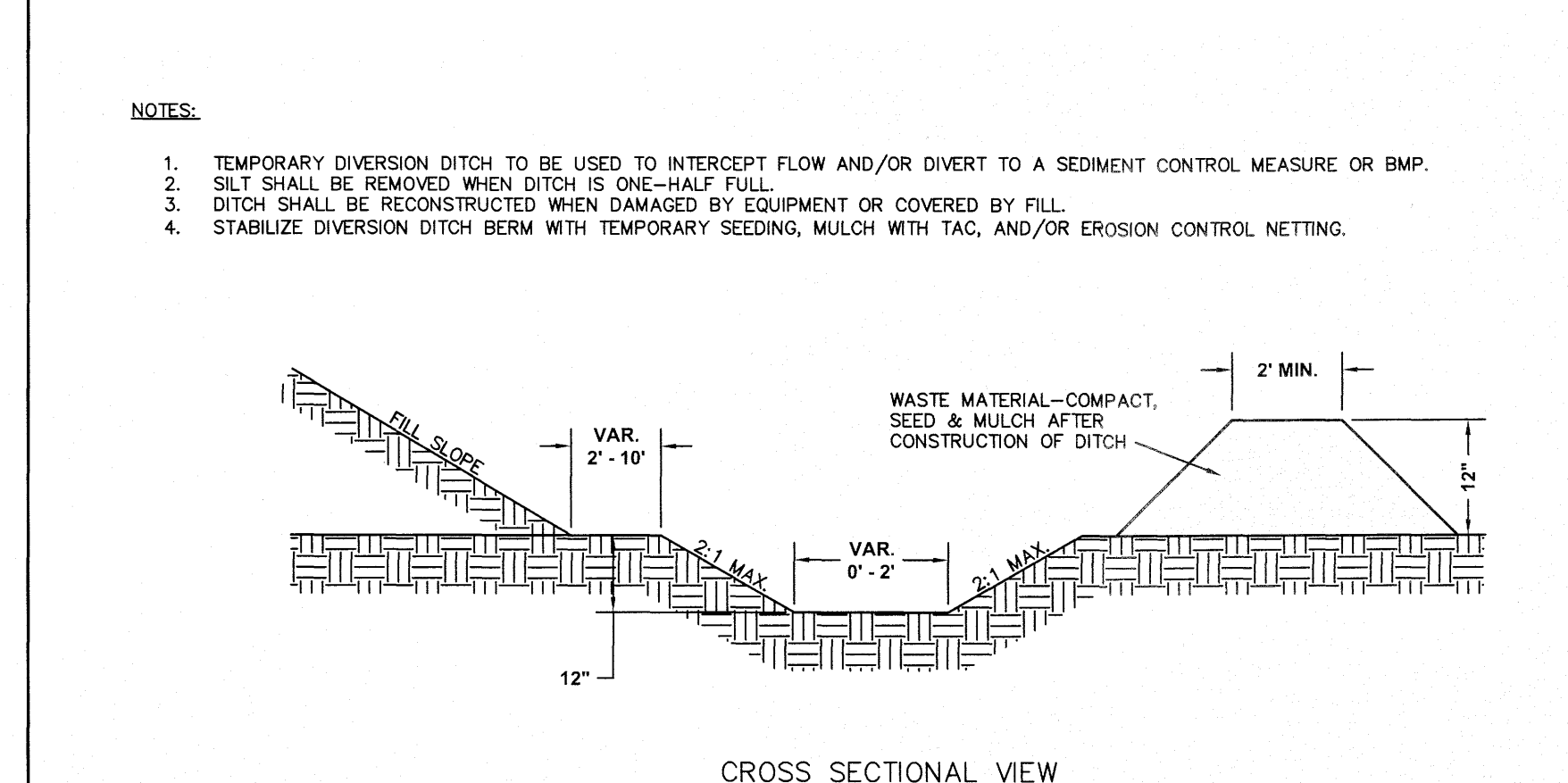
CROSS SECTIONAL VIEW

NOTES:

1. DIVERSION TO BE USED UPSLOPE OF A CONSTRUCTION SITE TO PREVENT STORM RUNOFF FROM ENTERING THE DISTURBED AREA.
2. IMMEDIATELY LINE AND STABILIZE BEFORE ANY DOWNSLOPE GRADING BEGINS (STABILIZATION MUST OCCUR BEFORE ISSUANCE OF A CERTIFICATE OF COMPLIANCE). STABILIZATION METHOD IS BASED ON VELOCITY OF OFFSITE DRAINAGE.
3. DIVERSIONS SHOULD ONLY BE USED FOR DRAINAGES 5 ACRES OR LESS.
4. ANY SEDIMENT LADEN WATER PRIOR TO STABILIZATION OF THE DIVERSION MUST BE DIVERTED INTO AN APPROVED EROSION AND SEDIMENT CONTROL BMP. CLEAN WATER SHOULD EMPTI INTO AN APPROVED OUTLET DEVICE.

STANDARD CLEAN WATER DIVERSION

EFFECTIVE: 01/31/08



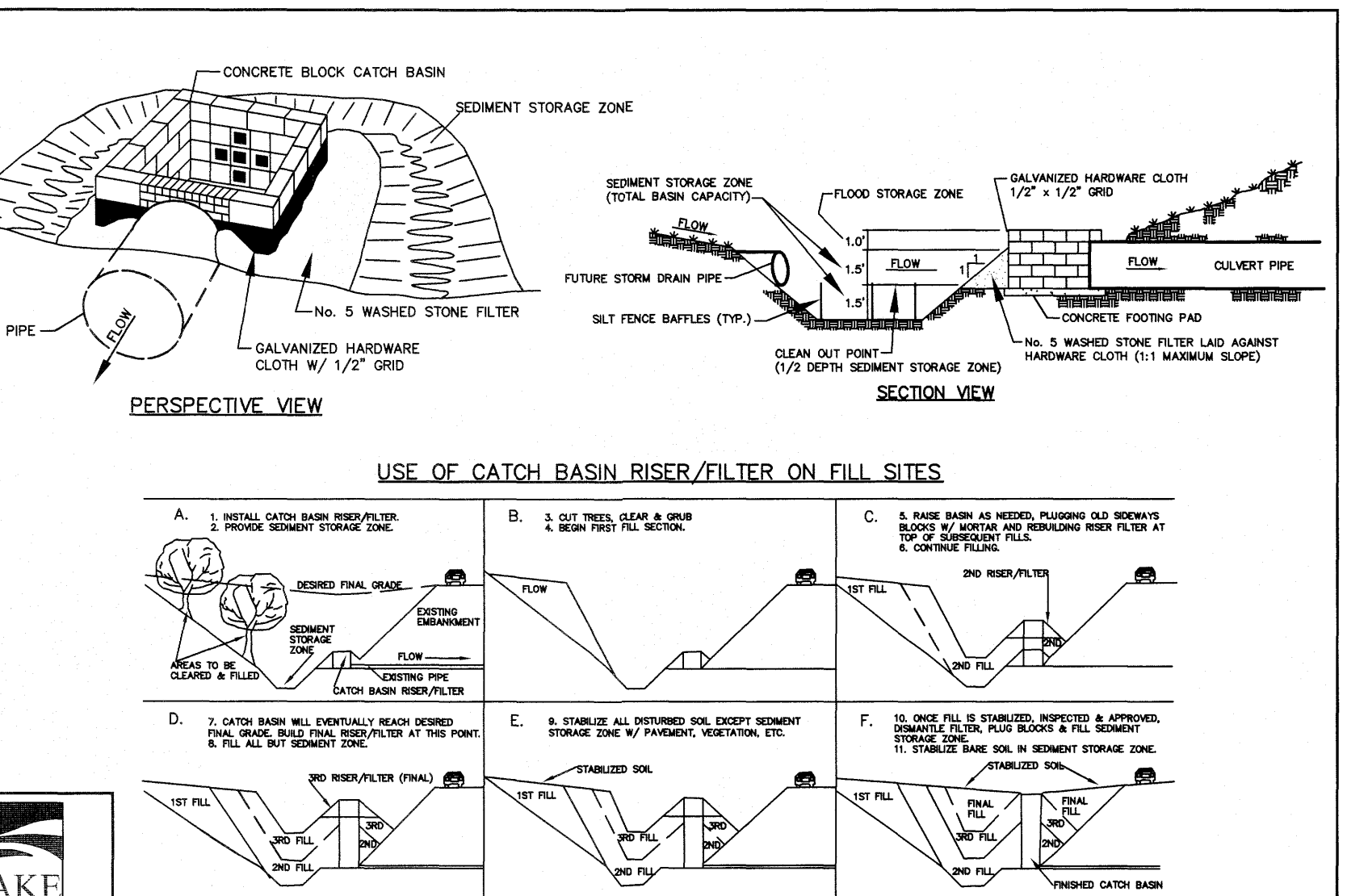
CROSS SECTIONAL VIEW

NOTES:

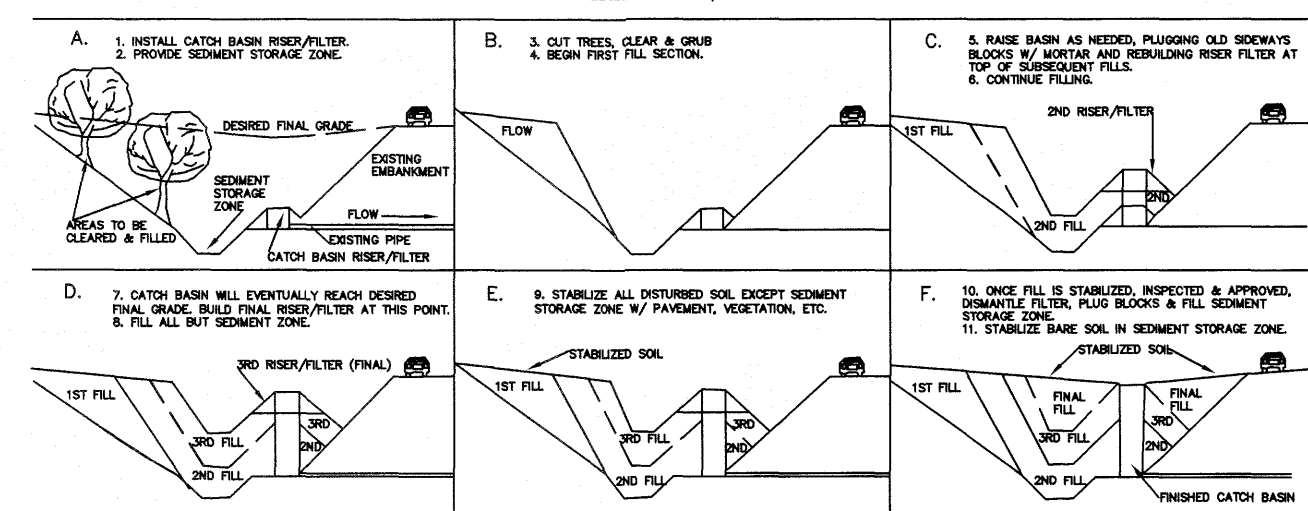
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAG, AND/OR EROSION CONTROL NETTING.

STANDARD TEMPORARY DIVERSION DITCH

EFFECTIVE: 01/31/08

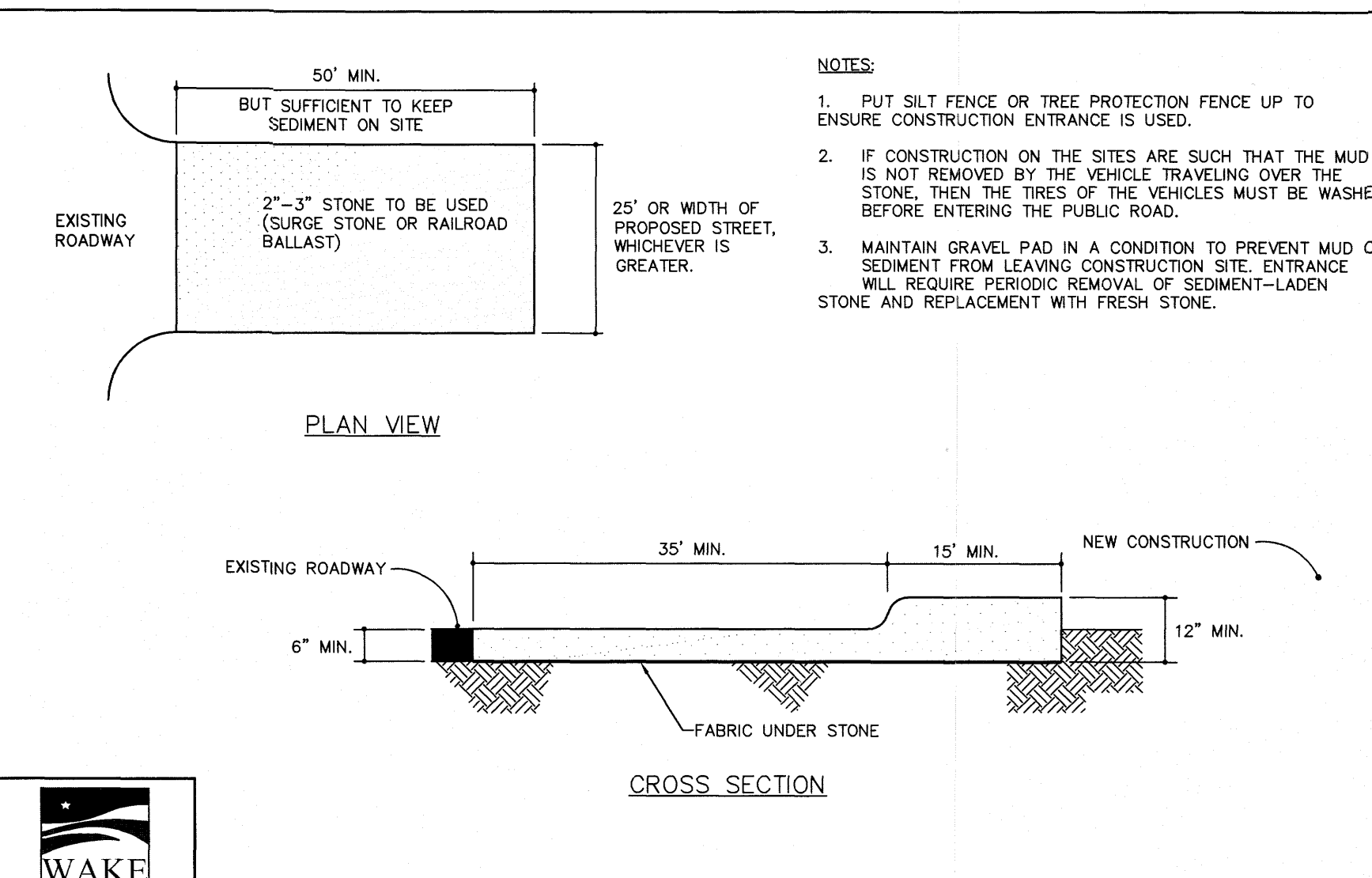


USE OF CATCH BASIN RISER/FILTER ON FILL SITES



STANDARD CATCH BASIN RISER/FILTER

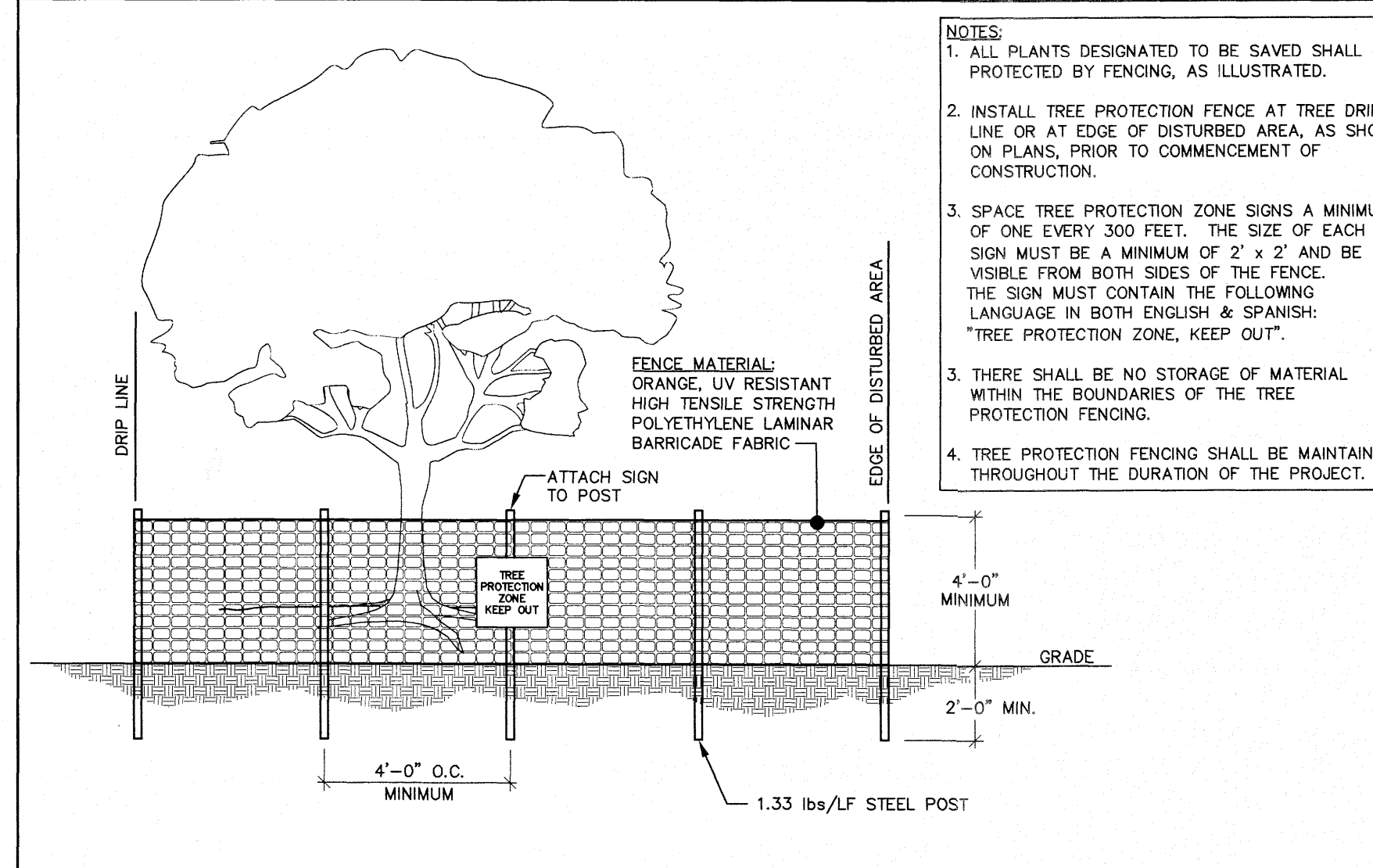
EFFECTIVE: 01/31/08



CROSS SECTION

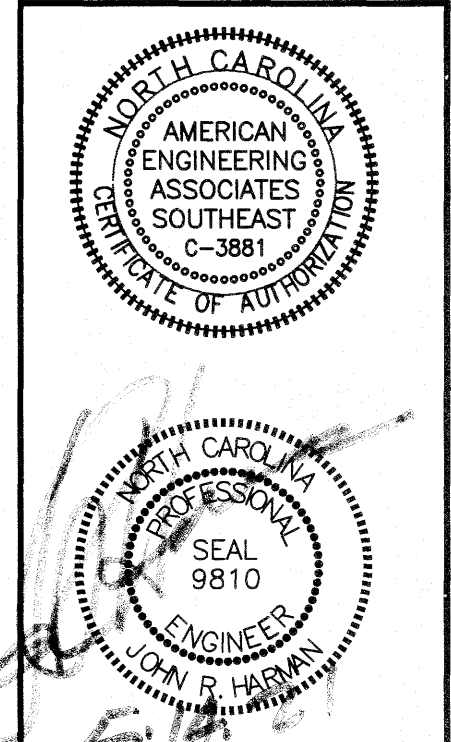
STANDARD CONSTRUCTION ENTRANCE

EFFECTIVE: 01/31/08



TREE PROTECTION FENCE

- NOTES:
1. ALL PLANTS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY FENCING, AS ILLUSTRATED.
  2. INSTALL TREE PROTECTION FENCE AT TREE DRIP LINE OR AT EDGE OF DISTURBED AREA, AS SHOWN ON PLANS, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
  3. SPACE TREE PROTECTION ZONE SIGNS A MINIMUM OF ONE EVERY 300 FEET. THE SIZE OF EACH SIGN MUST BE A MINIMUM OF 2' x 2' AND BE VISIBLE FROM BOTH SIDES OF THE FENCE. THE SIGN MUST CONTAIN THE FOLLOWING LANGUAGE IN BOTH ENGLISH & SPANISH: "TREE PROTECTION ZONE, KEEP OUT".
  3. THERE SHALL BE NO STORAGE OF MATERIAL WITHIN THE BOUNDARIES OF THE TREE PROTECTION FENCING.
  4. TREE PROTECTION FENCING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.



NO.	DATE	REVISION

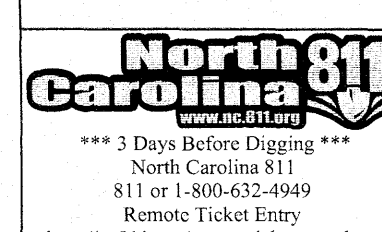
STIPULATION FOR REUSE  
THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS**  
**PHASE 1**  
**1832 ROLLESVILLE ROAD**  
**WAKE COUNTY, NC**

JOB NUMBER:  
CHECKED BY:  
DRAWN BY:  
DATE:  
SHEET TITLE:  
**KALAS FALLS CIVIL DETAILS**  
SHEET NO.:  
**CD1**

**SITE PERMITTING APPROVAL**  
Water and Sewer Permits (if applicable)  
The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # W-3784  
The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # W-3784  
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City of Raleigh Public Utilities Department Permit #  

**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**  
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City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer \_\_\_\_\_



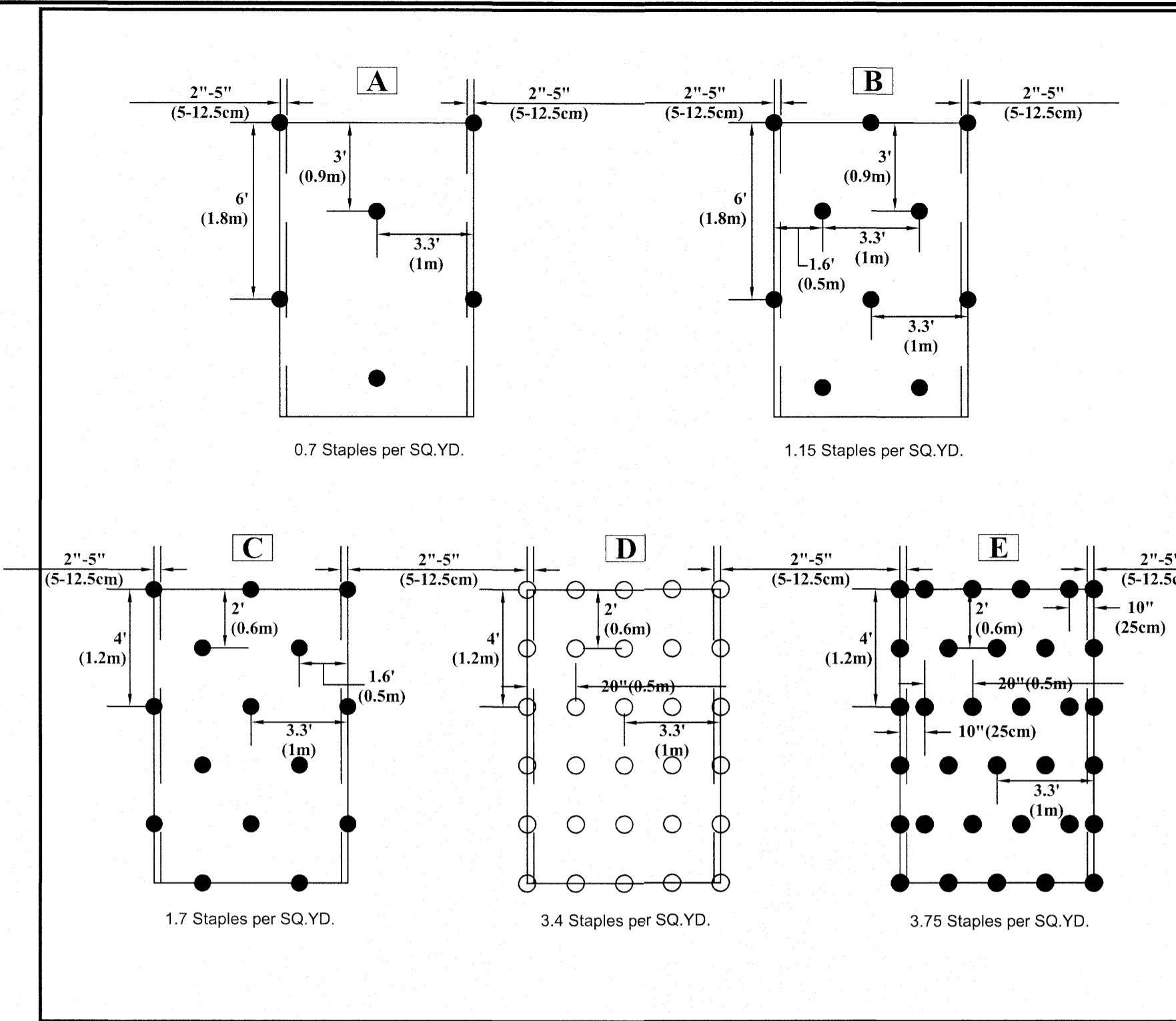












**NOTES:**

\* Use ECMSD<sup>®</sup> for more accurate staple pattern selection.

Disclaimers:  
 The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 5-4-17 Drawing Not To Scale

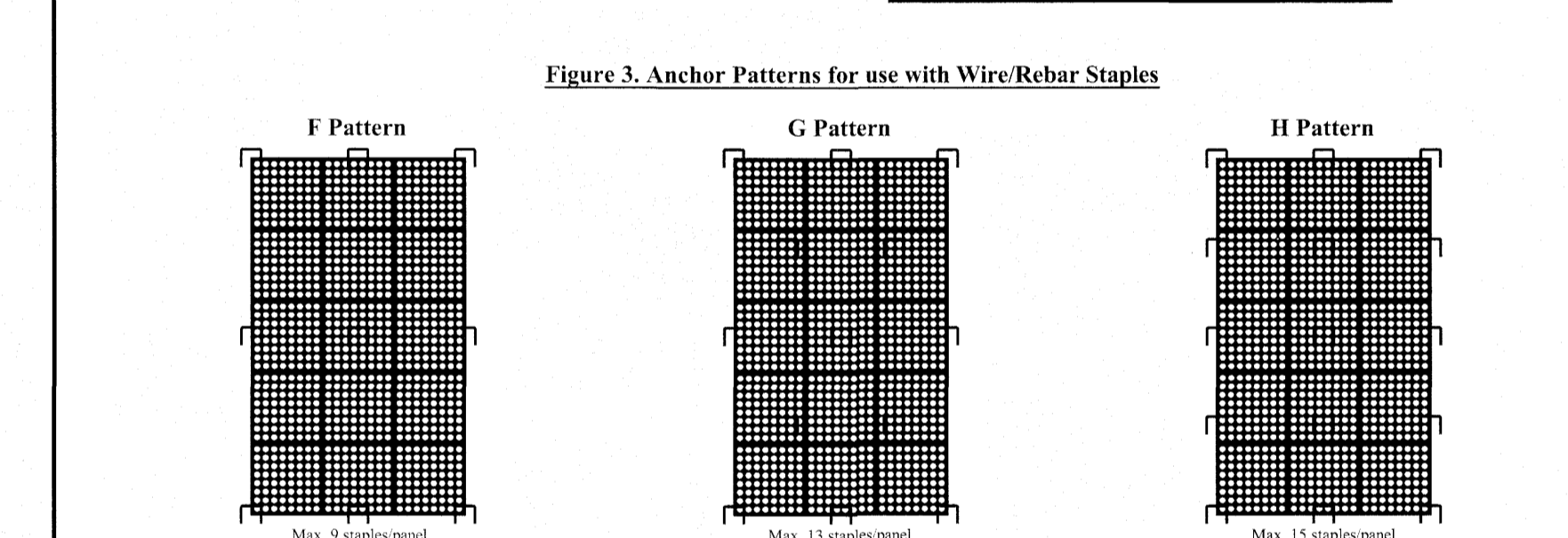
**NORTH AMERICAN GREEN**  
 5401 St. Wendel - Cynthiana Rd. Poseyville, IN 47633  
 PH: 800-722-2040 www.nagreen.com

**Figure 1. Minimum Anchor Pattern**

Maximum Design Conditions	Anchor Type
Shear Stress < 6 lbs/ft <sup>2</sup>	10 in Wire Staple
Velocity < 1.4 ft/s	10 in Wire Staple
Wave Height 6 in.	10 in Wire Staple
> 6-8 lbs/ft <sup>2</sup>	12 in Wire Staple
> 1.4-1.8 ft/s	12 in Wire Staple
> 8 lbs/ft <sup>2</sup>	18 in Wire Staple
> 1.8 ft/s	18 in Wire Staple

**Figure 2. Minimum Anchor Type**

Soil Type	Anchor Type
Clay/Clay Loam	10 in Wire Staple
Silt Loam - Loam	10 in Wire Staple
Sandy Loam	12 in Wire Staple
Sand / Muck < 6 in	12 in Rebar Staple
Sand / Muck 6-12 in	18 in Rebar Staple
Sand / Muck 12-18 in	24 in Earth Anchor + 12 in Rebar Staple
Sand / Muck > 18 in	36 in Earth Anchor + 18 in Rebar Staple



**NOTE:** Number of staples used per panel can be reduced by 30-40% when sharing staples between panels.

□ - Wire/Rebar Staple  
 ⊕ - Percussion Earth Anchor

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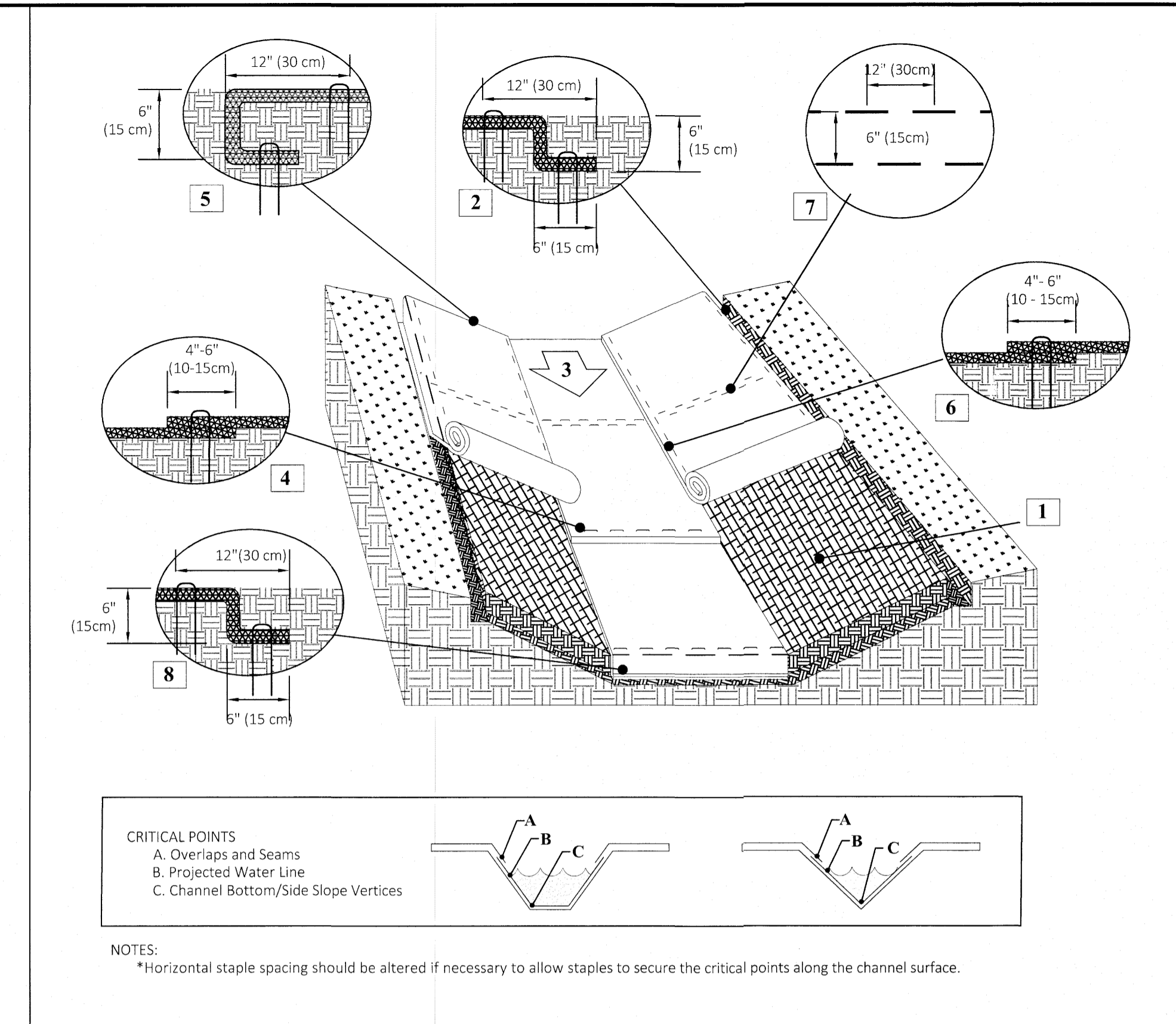
Drawn on: 5-4-17 Drawing Not To Scale

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 PH: 800-722-2040 www.nagreen.com

**ShoreMax**

**ANCHORING GUIDE**

- When installing ShoreMax mat, the anchor pattern (figure 3 or 4) should be selected based on the expected maximum design conditions (shear stress, velocity, or wave impact) (figure 1).
- Anchor selection should be based on the soil type and pull-out strength required (figure 2). In soft, highly erodible soils percussion earth anchors may be necessary. Earth anchors can be installed in conjunction with rebar staples (figure 4).
- When using percussion earth anchors, position anchors in each corner and the center of the panel. Place staples in the appropriate pattern throughout remainder of mat. Staples can be shared between two adjacent panels.



**Instructions**

- Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed. Ground surface must be free of debris, rocks, clay clods and raked smooth sufficient to allow intimate contact of the RECP with the soil over the entirety of the installation.
- Begin at the top of the channel by anchoring the RECPs in a 6" (15 cm) deep X 6" (15 cm) wide trench with approximately 12" (30 cm) of RECPs extended beyond the up-slope portion of the trench. Use ShoreMax mat at the channel/culvert outlet as supplemental scour protection as needed. Anchor the RECPs with a row of staples/stakes/pins approximately 12" (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12" (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes/pins spaced approximately 12" (30 cm) apart across the width of the RECPs.
- Roll center RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes/pins in appropriate locations as shown in the staple pattern guide.
- Place consecutive RECPs end-over-end (Shingle style) with a 4" - 6" (10 - 15 cm) overlap. Use a double row of staples staggered 4" apart and 4" on center to secure RECPs.
- Full length edge of RECPs at top of side slopes must be anchored with a row of staples/stakes/pins spaced at S<sub>1</sub> apart in a 6" (15 cm) deep X 6" (15 cm) wide trench. Backfill and compact the trench after stapling.
- Adjacent RECPs must be overlapped approximately 4" - 6" (10 - 15 cm) and secured with staples/stakes/pins at S<sub>1</sub>.
- In high flow channel applications a staple check slot is recommended at 30 to 40 foot (9 - 12 m) intervals. Use a double row of staples staggered 6" (15 cm) apart and 12" (30 cm) on center over entire width of the channel.
- The terminal end of the RECPs must be anchored with a row of staples/stakes/pins spaced at S<sub>1</sub> apart in a 6" (15 cm) deep X 6" (15 cm) wide trench. Backfill and compact the trench after stapling.
- Fasteners should provide a minimum of twenty pounds of pullout resistance. Six-inch (10 cm) X one-inch (2.5 cm) eleven gauge staples are typically adequate. In loose soils, longer staples may be necessary, twist pins can provide the greatest pullout resistance. In hard or rocky soils, straight pins may be used where staples or twist pins are refused, provided the minimum pullout requirements are met. Bio-degradable fasteners shall not be used with VMax (TRM) or TMax (HPTRM) materials.

**Staple Pattern Guide**

Plan View

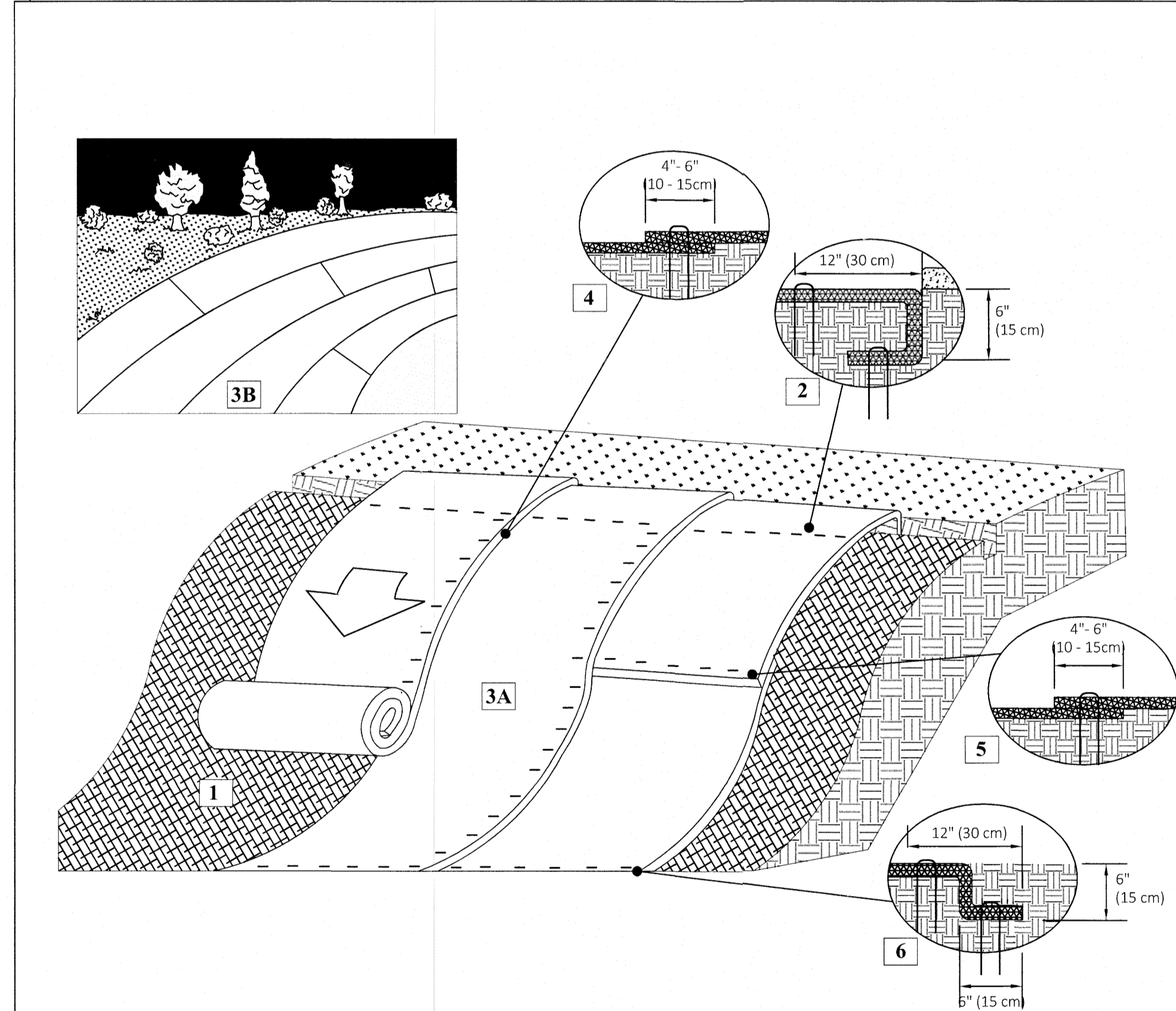
Dimension	Staple Pattern
W <sub>T</sub>	20" (50 cm)
L <sub>T</sub>	20" (50 cm)
S <sub>T</sub>	18" (45 cm)
Nominal Frequency	3.8 / 5Y

Pin / Staple / Twist Pin, as appropriate for field conditions

**AMERICAN ENGINEERING**  
 American Engineering Associates - Southeast, P.A.  
 4020 Westchase Boulevard, Suite 450  
 Raleigh, NC 27607

Professional Engineer Seal  
 NORTH CAROLINA  
 ENGINEER  
 SEAL  
 9610  
 C-388

DETAIL SELECTION ONLY



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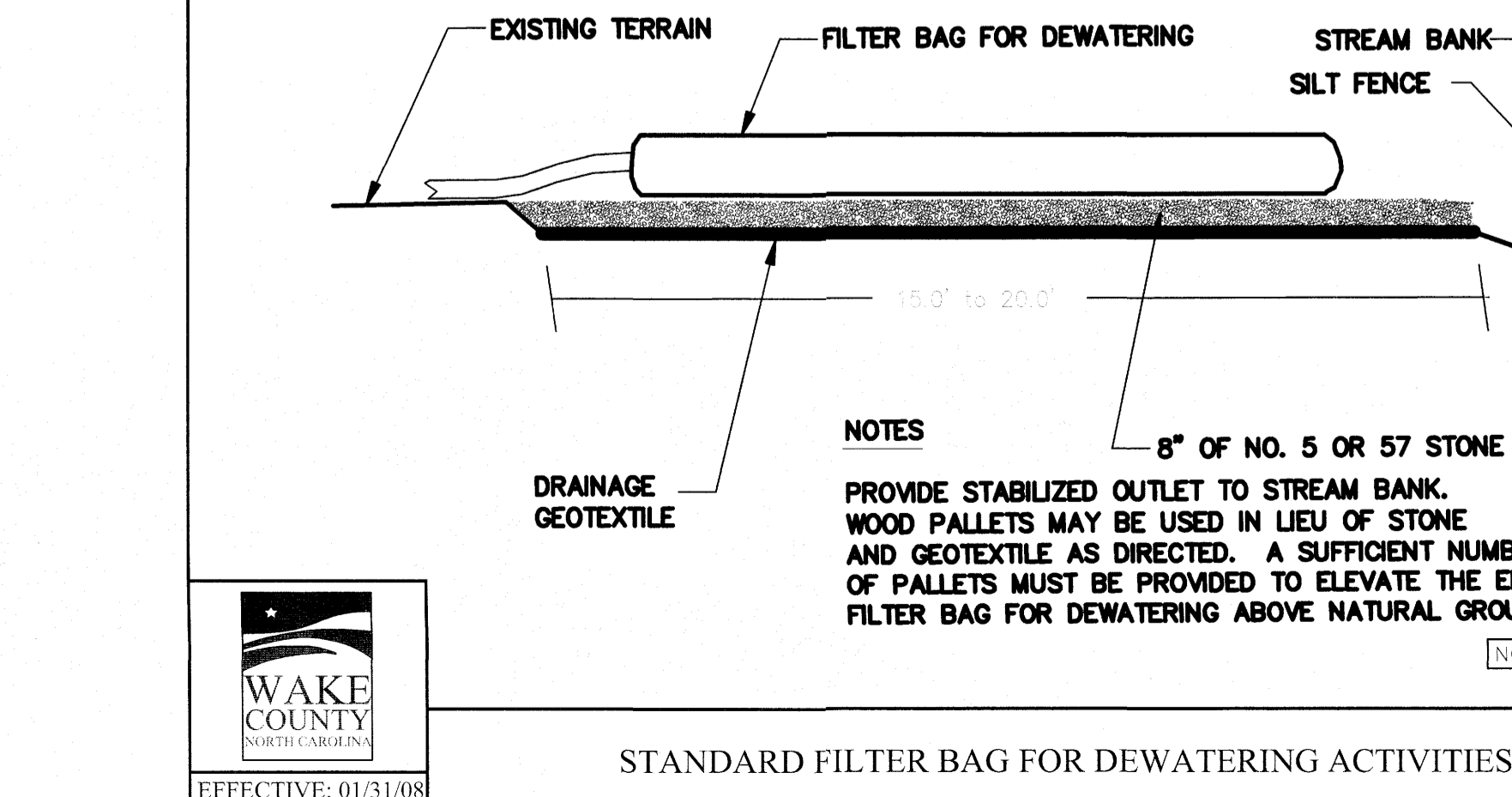
NO. DATE REVISION

**KALAS FALLS PHASE 1**  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC

JOB NUMBER:  
 CHECKED BY:  
 DRAWN BY:  
 DATE:  
 SHEET TITLE:  
**KALAS FALLS CIVIL DETAILS**  
 SHEET NO.:  
**CD4**

**AMERICAN ENGINEERING**  
 American Engineering Associates - Southeast, P.A.  
 4020 Westchase Boulevard, Suite 450  
 Raleigh, NC 27607

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 9610  
 C-388



**WAKE COUNTY**  
 NORTH CAROLINA

EFFECTIVE: 01/31/08

**SITE PERMITTING APPROVAL**

Water and Sewer Permits (if applicable)

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Raleigh Water Review Officer \_\_\_\_\_

**North Carolina 811**  
 3 Days Before Digging  
 North Carolina 811  
 811 or 1-800-632-4349  
 Remote Ticket Entry  
 http://nc811.org/remoteticketentry.htm

1:\projects\1832 Rolesville Road\1832 Rolesville Road.dwg















































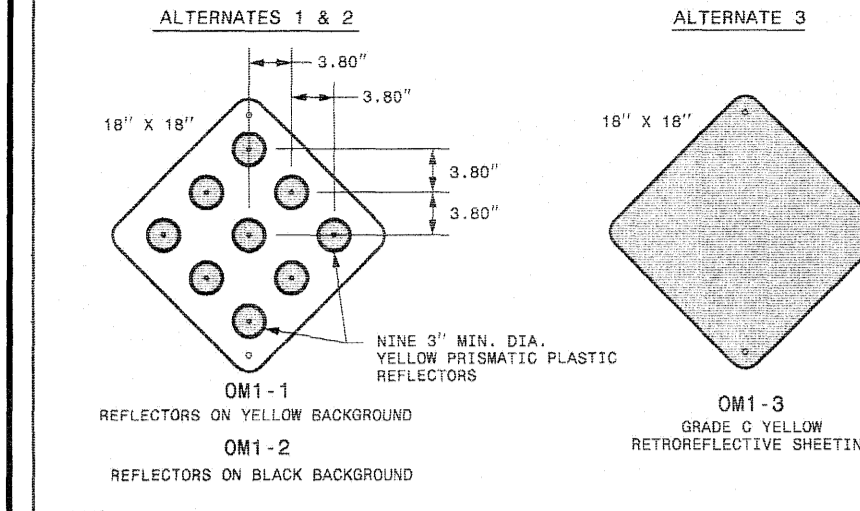






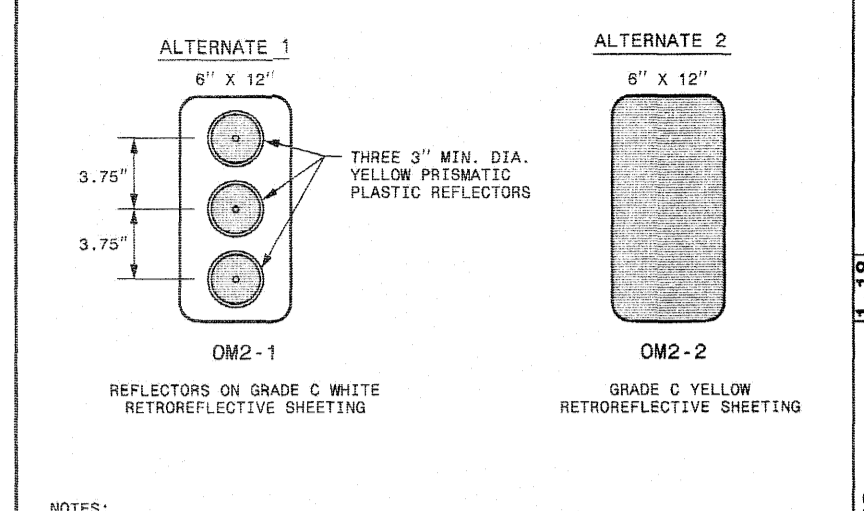


**TYPE 1 OBJECT MARKERS**



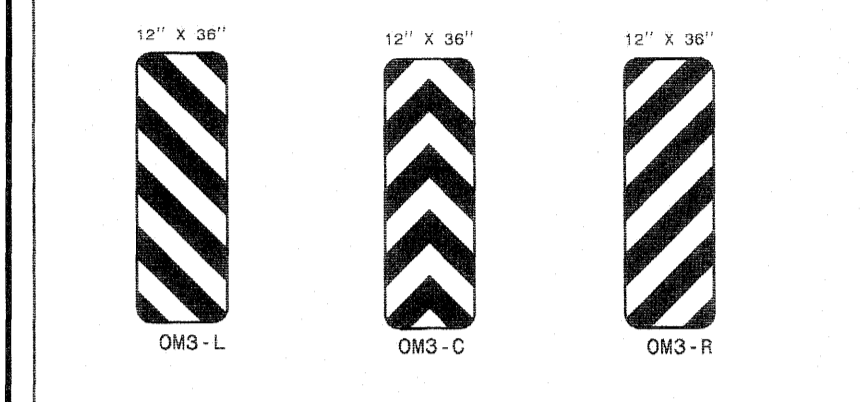
NOTES:  
1. MATERIAL - .125" ALUMINUM PANEL.

**TYPE 2 OBJECT MARKERS**



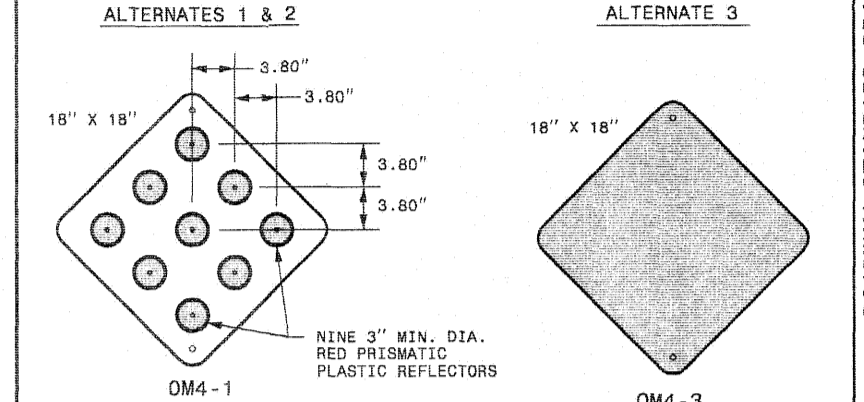
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**TYPE 3 OBJECT MARKERS**



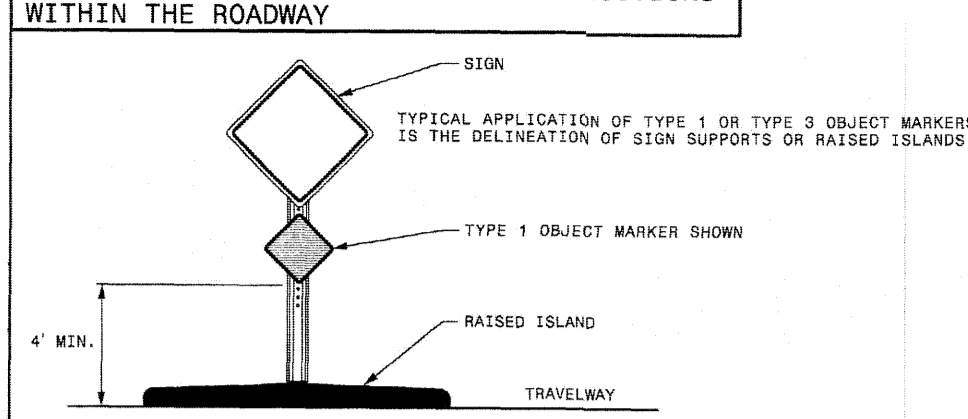
NOTES:  
1. GRADE C YELLOW RETROREFLECTIVE SHEETING WITH ALTERNATING BLACK AND YELLOW STRIPES.  
2. STRIPES SLOPE DOWNWARD AT 45 DEGREES TOWARD THE SIDE OF THE OBSTRUCTION WHICH TRAFFIC IS TO PASS.  
3. MATERIAL - .125" ALUMINUM PANEL.

**TYPE 4 OBJECT MARKERS (END OF ROAD)**

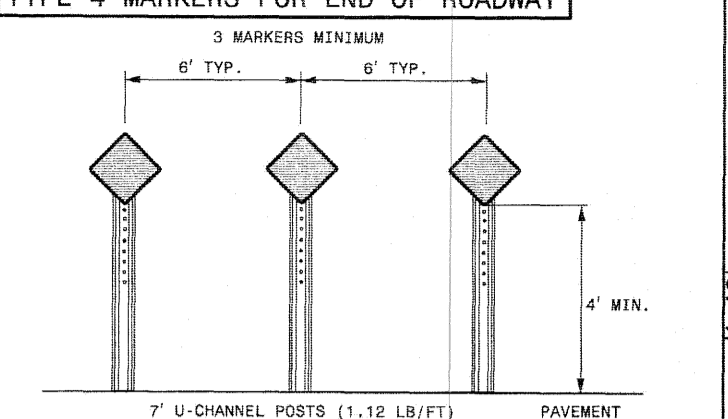


NOTES:  
1. MATERIAL - .125" ALUMINUM PANEL.

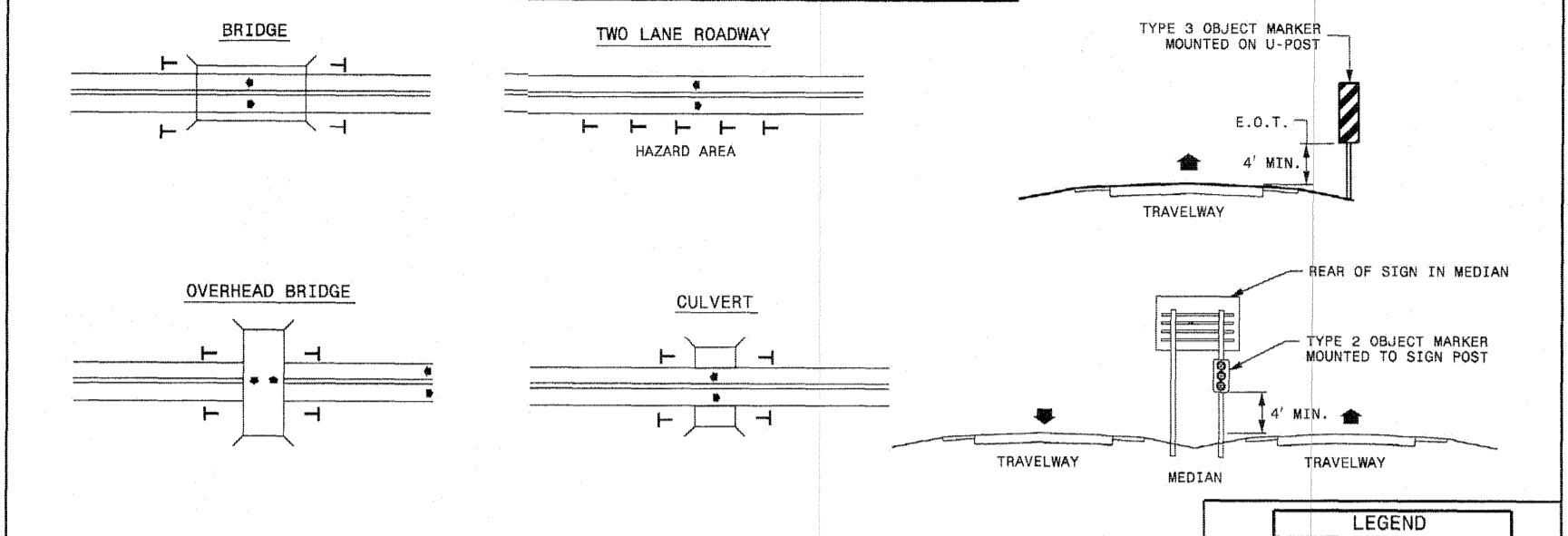
**TYPE 1 OR TYPE 3 MARKERS FOR OBSTRUCTIONS WITHIN THE ROADWAY**



**TYPE 4 MARKERS FOR END OF ROADWAY**

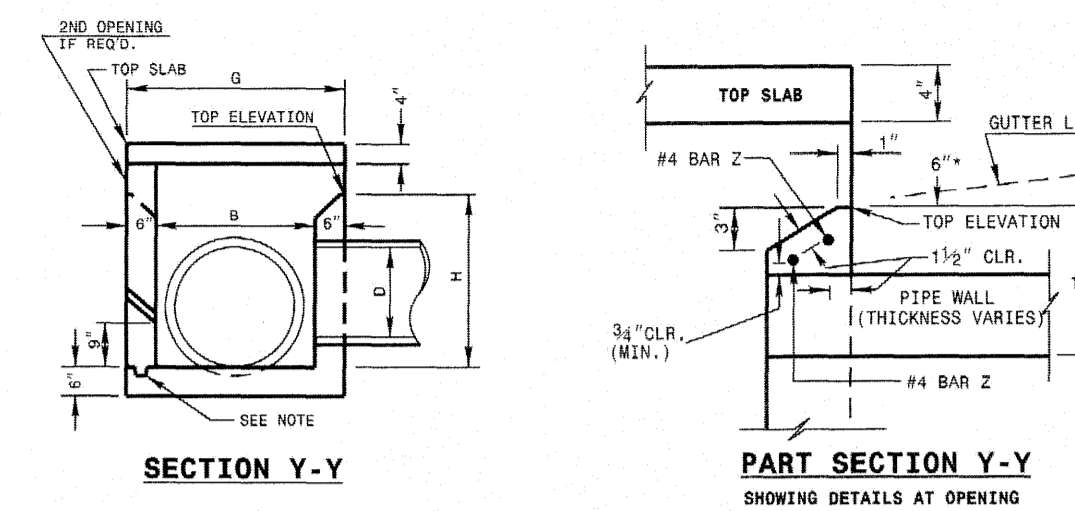
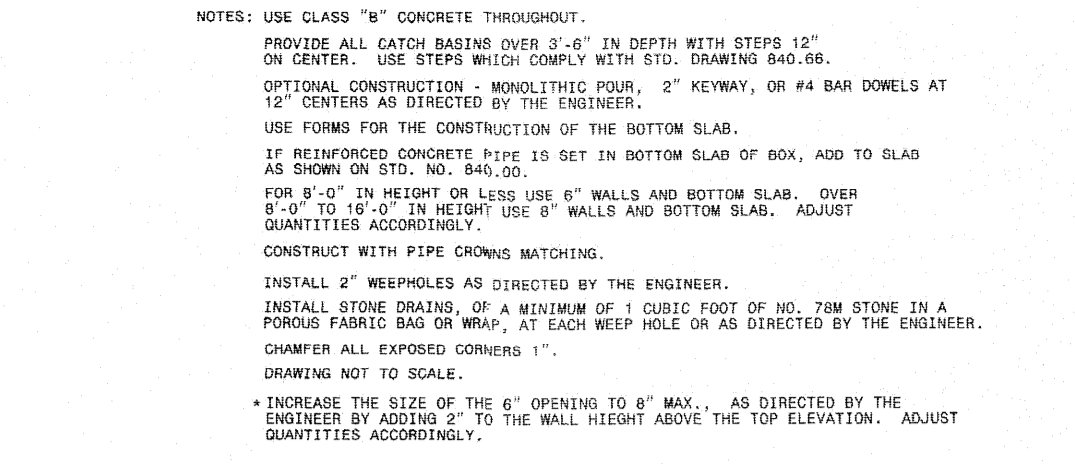
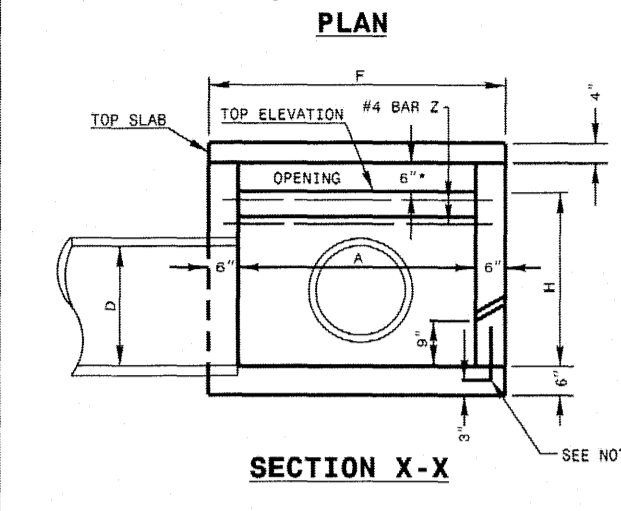
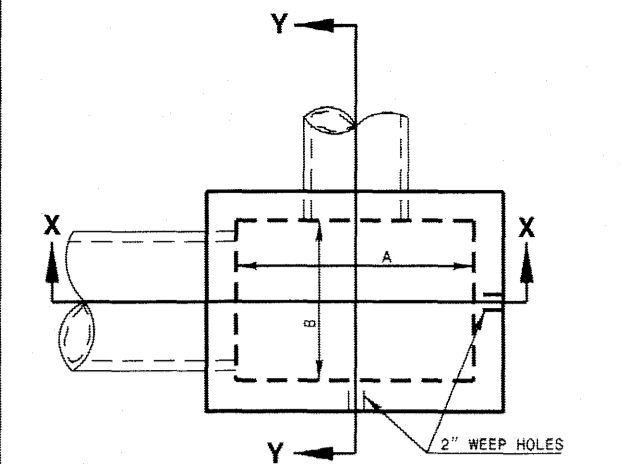


**TYPE 2 OR TYPE 3 MARKERS FOR OBSTRUCTIONS ADJACENT TO THE ROADWAY**



TYPICAL APPLICATIONS OF TYPE 2 OR TYPE 3 OBJECT MARKERS INCLUDES DELINEATION OF BRIDGE PIERS, ABUTMENTS, HANDRAILS, CULVERT HEADWALLS, SHOULDER DROPOFFS, OR OTHER UNDESIRABLE CONDITIONS WHEN GUARDRAIL OR OTHER ROADSIDE PROTECTION IS NOT IN PLACE.

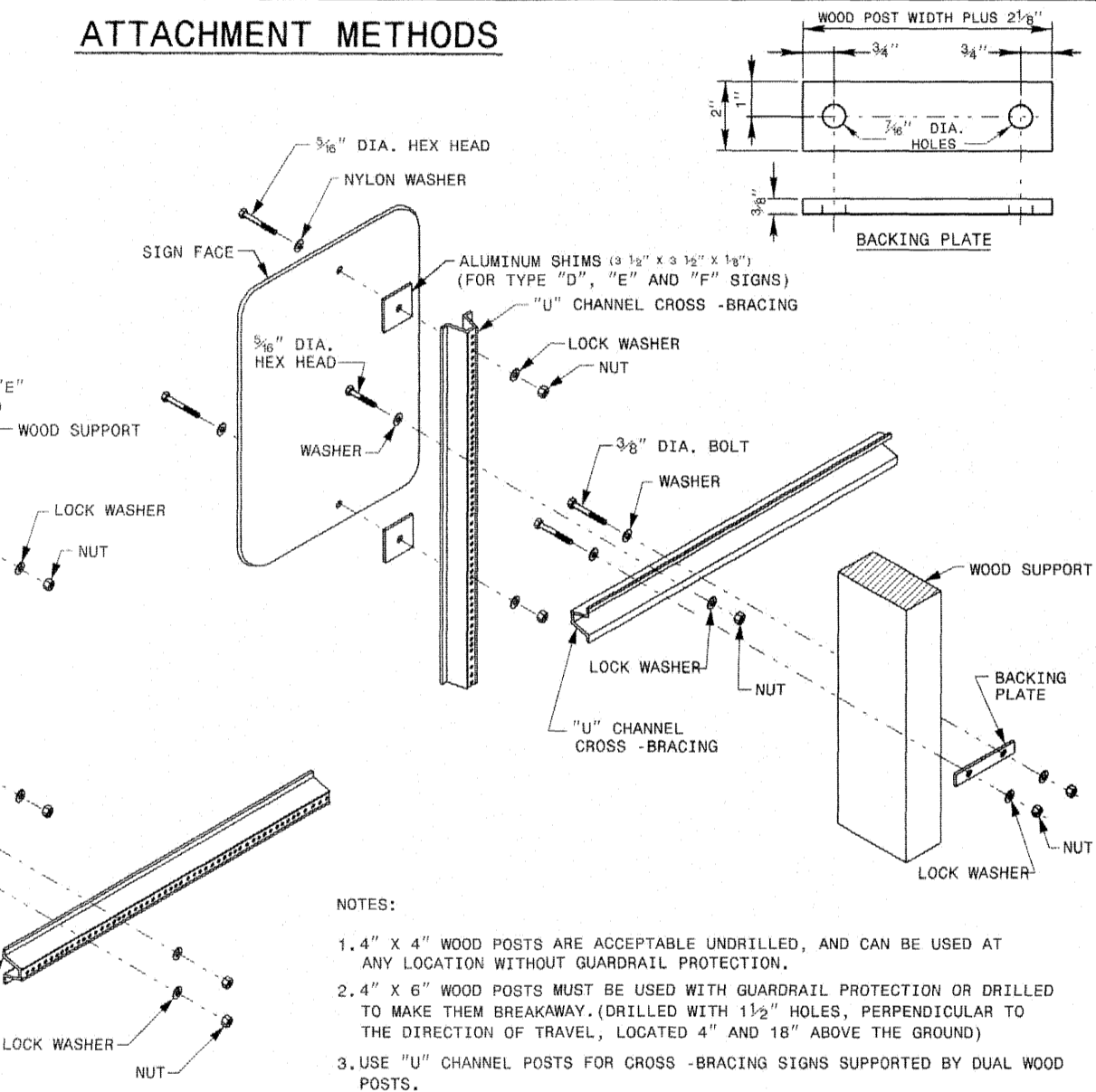
LEGEND:  
○ OBJECT MARKER  
→ DIRECTION OF TRAFFIC FLOW



PIPE SIZE	SPAC	WIDTH	HEIGHT	MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT = 11")		CONCRETE QUANTITY (CU YD)	REINFORCING (LBS)	FORMWORK (SQ YD)
				TYPE 1	TYPE 2			
12"	3'-6"	2'-3"	1'-10"	4	3'-0"	1.181	0.271	0.280
15"	3'-6"	2'-3"	1'-10"	4	3'-0"	1.181	0.271	0.280
18"	4'-0"	2'-6"	2'-4"	5	3'-0"	1.228	0.280	0.284
24"	4'-0"	2'-6"	2'-4"	5	3'-0"	1.228	0.280	0.284
30"	4'-0"	2'-6"	2'-4"	5	3'-0"	1.228	0.280	0.284
36"	4'-0"	2'-6"	2'-4"	5	3'-0"	1.228	0.280	0.284
42"	4'-0"	2'-6"	2'-4"	5	3'-0"	1.228	0.280	0.284
48"	4'-0"	2'-6"	2'-4"	5	3'-0"	1.228	0.280	0.284

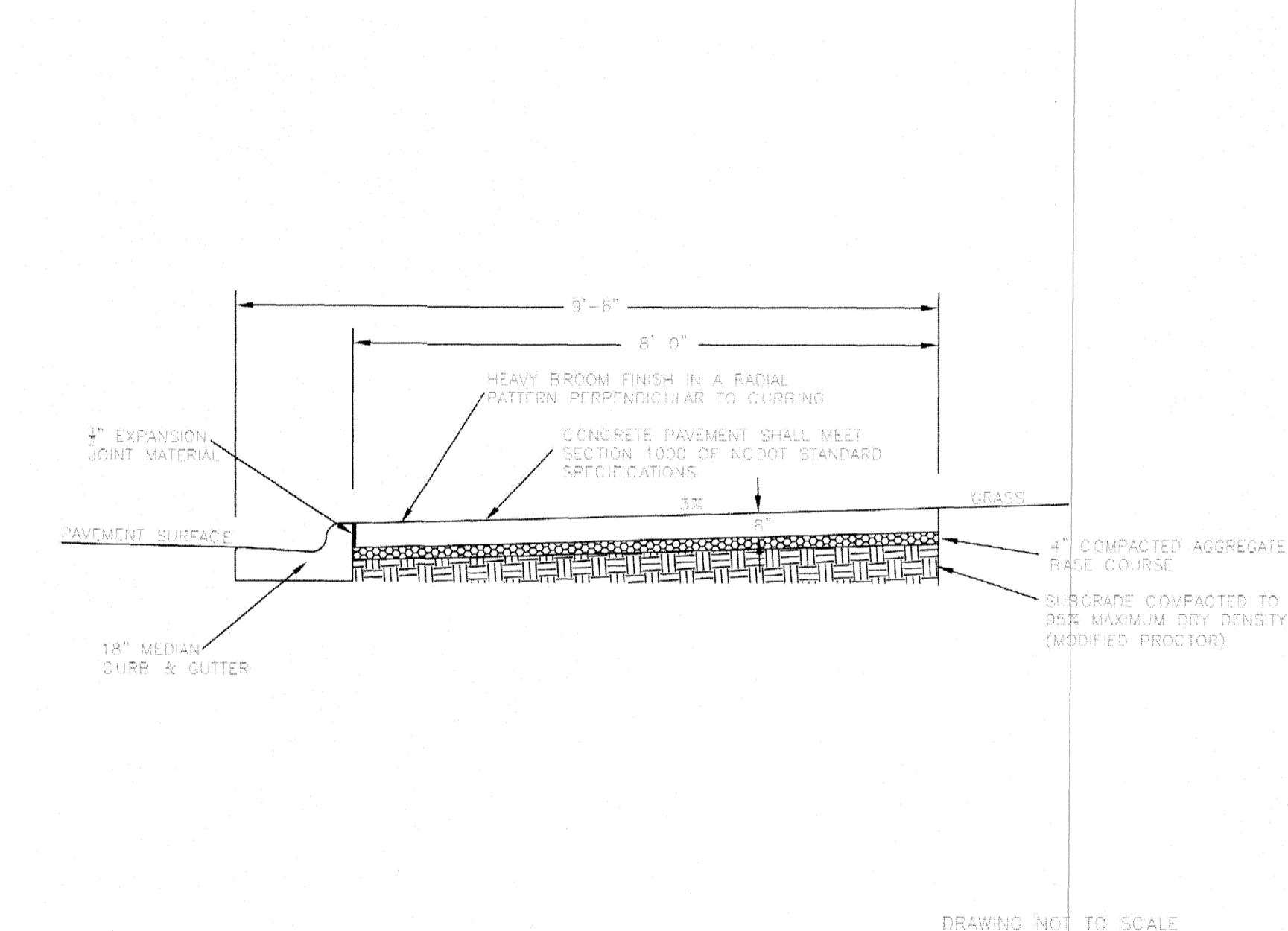
**ATTACHMENT METHODS**

POST SIZE AND DRILLED HOLE SIZE	A	B	HOLE SIZE	EMBEDMENT
4" X 4"	1 1/4"	1 1/4"	1 1/4"	3.0 FT.
4" X 6"	1 1/4"	1 1/4"	1 1/4"	4.0 FT.



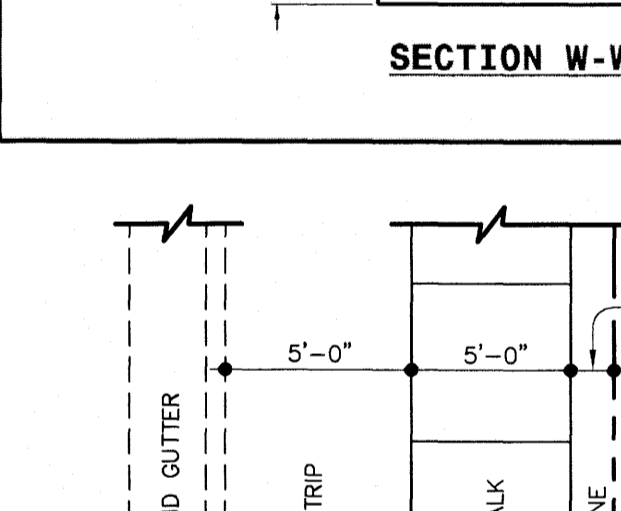
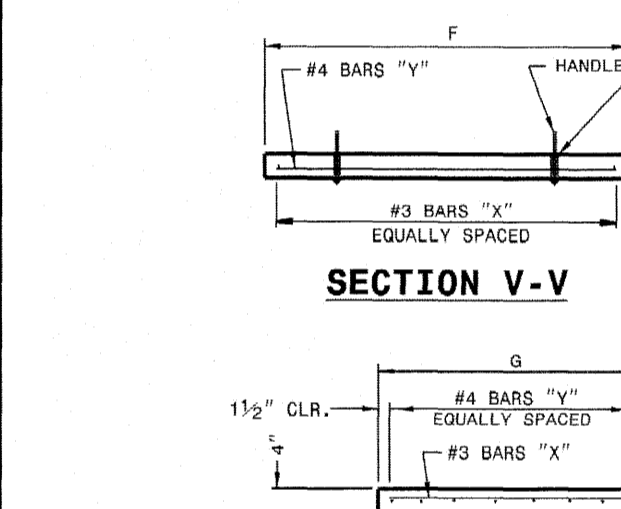
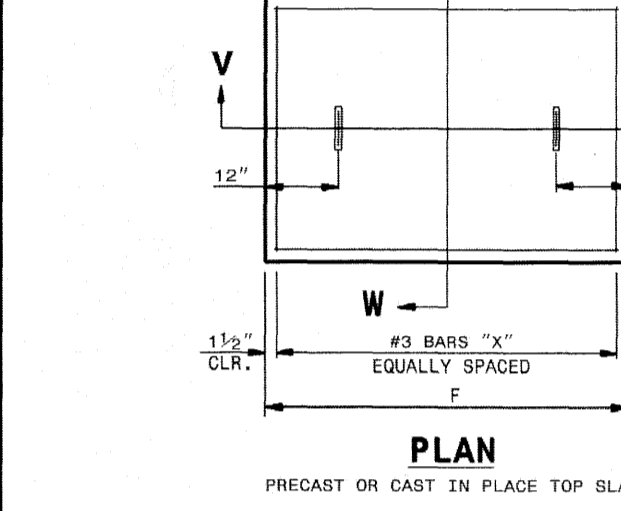
NOTES:  
1. 4" X 4" WOOD POSTS ARE ACCEPTABLE UNDRILLED, AND CAN BE USED AT ANY LOCATION WITHOUT GUARDRAIL PROTECTION.  
2. 4" X 6" WOOD POSTS MUST BE USED WITH GUARDRAIL PROTECTION OR DRILLED TO MAKE THEM BREAKAWAY - DRILLED WITH 1 1/2" HOLES, PERPENDICULAR TO THE DIRECTION OF TRAVEL, LOCATED 4" AND 18" ABOVE THE GROUND.  
3. USE "U" CHANNEL POSTS FOR CROSS-BRACING SIGNS SUPPORTED BY DUAL WOOD POSTS.

**STANDARD 10-FT-STREET-SIDE TRAIL ASPHALT GREENWAY TRAIL**

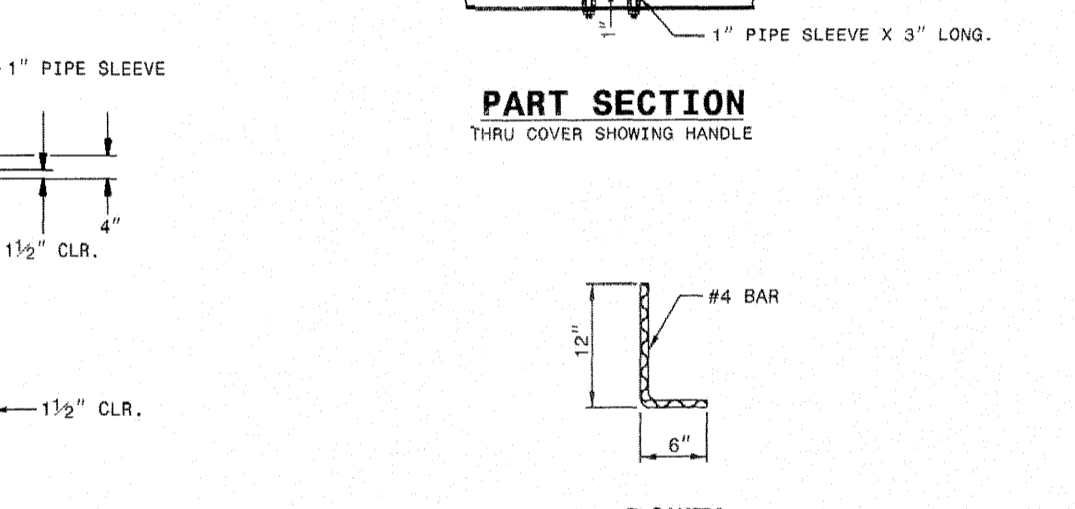
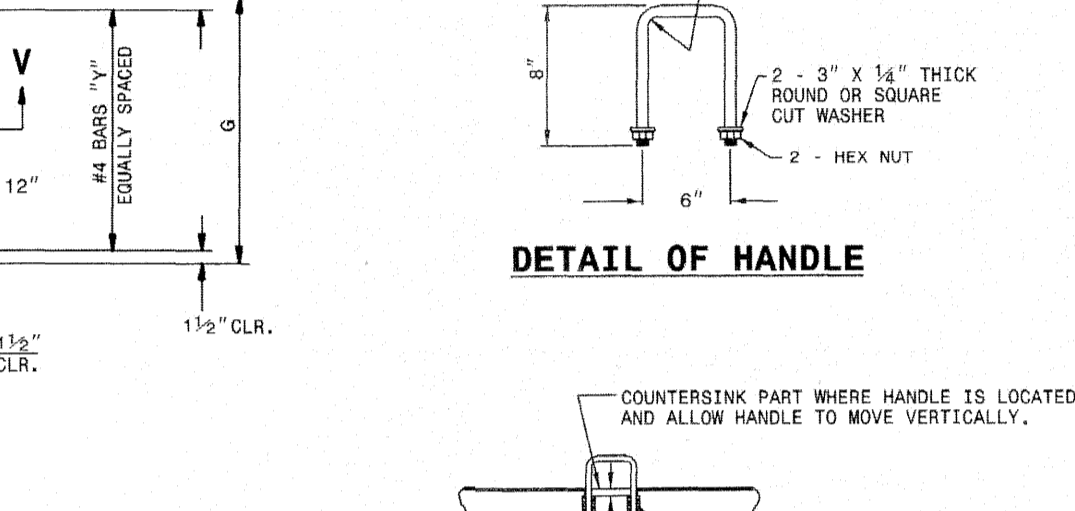


NOTES:  
1. CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ALL SLOPES DISTURBED BY CONSTRUCTION.  
2. NO ABOVE GROUND UTILITIES OR UTILITY SURFACE COVERS/PLATES/MANHOLES SHALL BE LOCATED WITHIN TRAIL AND SHALL BE MINIMUM 2 FEET FROM THE EDGE OF TRAIL. RAISED MANHOLES SHALL BE MINIMUM 4 FEET FROM TRAIL EDGE.  
3. ALL TRAILS SHALL BE LOCATED MINIMUM 5 FEET FROM THE BACK OF CURB.  
4. SIDE SLOPES SHALL NOT EXCEED 3:1. CUT & FILL SLOPES SHALL TIE INTO EXISTING SLOPES TO CREATE AN EVEN TRANSITION.  
5. CROSS SLOPE TYPICALLY TO LOW SIDE BUT CROSS SLOPE TO INSIDE OF DOWNHILL CURVES, WITH GRADUAL TRANSITIONS BETWEEN ANY CROSS SLOPE DIRECTION CHANGES.

**CONCRETE SIDEWALK**

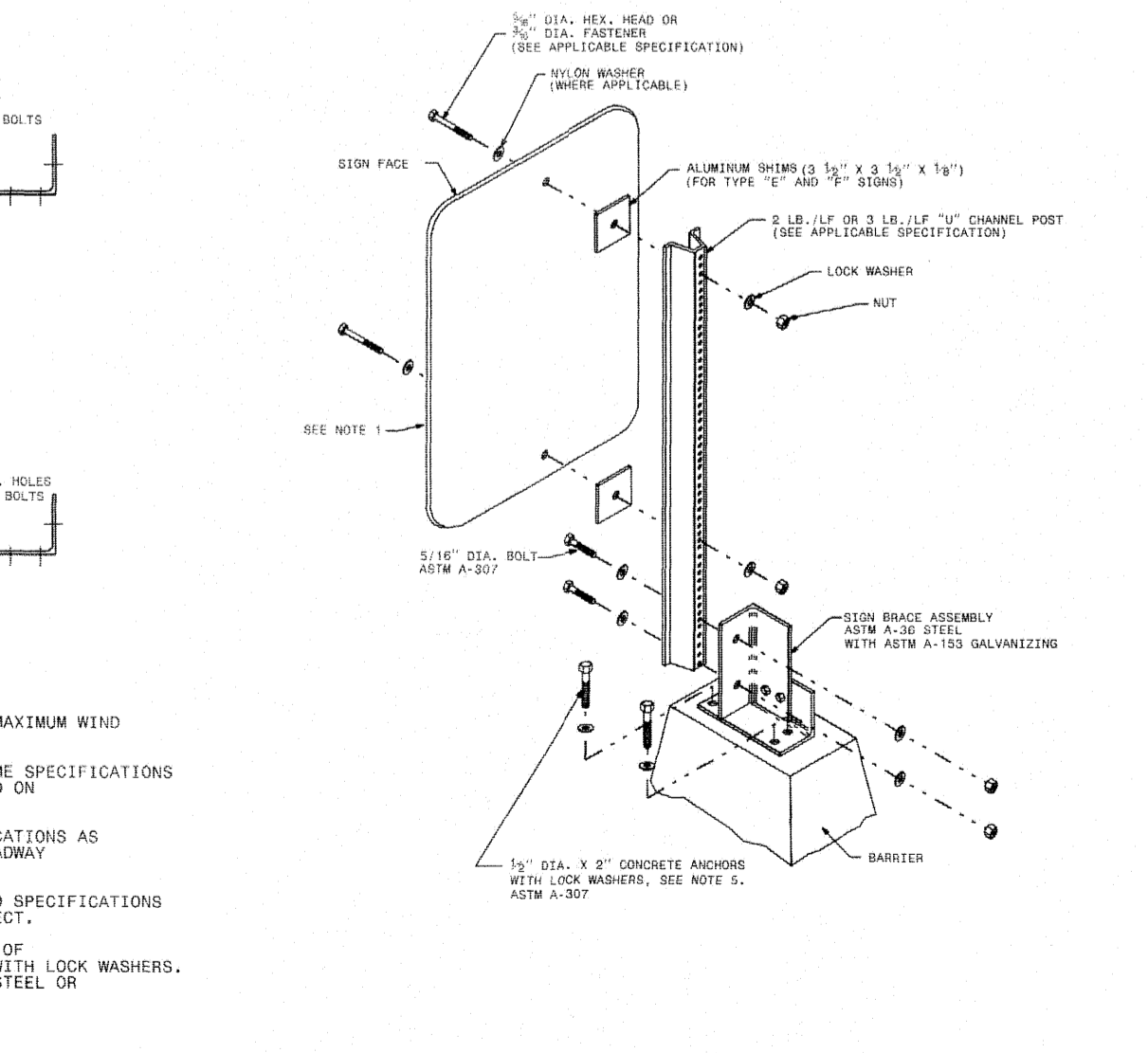
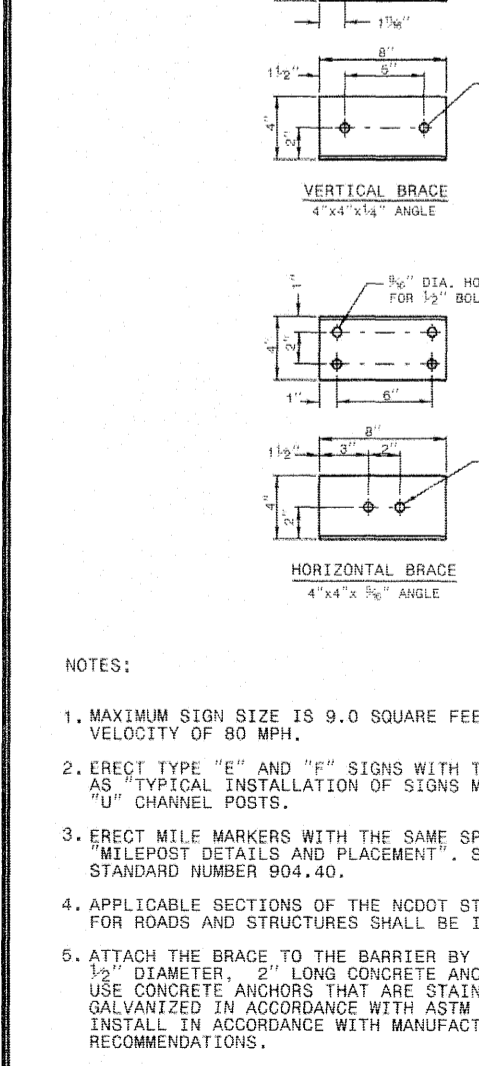


**TRANSVERSE EXPANSION JOINT**



NOTES:  
1. TRANSVERSE EXPANSION JOINTS TO BE A MAXIMUM OF 50 FEET.  
2. ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.  
3. A 6 INCH DEPTH IS REQUIRED AT LOCATIONS OF DRIVEWAY CROSSINGS, AT STREET INTERSECTIONS (ALONG THE LENGTH OF RADIUS CURB RETURNS), AND IN THE HANDICAP RAMPS.

**BARRIER SIGN SUPPORT ASSEMBLY**



NOTES:  
1. MAXIMUM SIGN SIZE IS 9.0 SQUARE FEET IN MAXIMUM WIND VELOCITY OF 80 MPH.  
2. ERECT TYPE "E" AND "F" SIGNS WITH THE SAME SPECIFICATIONS AS TYPICAL INSTALLATION OF SIGNS MOUNTED ON "U" CHANNEL POSTS.  
3. ERECT TYPE "D" SIGNS WITH THE SAME SPECIFICATIONS AS TYPICAL INSTALLATION OF SIGNS MOUNTED ON "U" CHANNEL POSTS.  
4. APPLICABLE SECTIONS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SHALL BE IN EFFECT.  
5. ATTACH THE BRACE TO THE BARRIER BY MEANS OF 1/2" DIAMETER ALUMINUM CONCRETE ANCHORS WITH LOCK WASHERS. GALVANIZED IN ACCORDANCE WITH ASTM A153 GALVANIZING WITH LOCK WASHERS. SEE NOTE 5. ASTM A307.

**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
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SHEET 1 OF 1  
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SHEET 2 OF 2  
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SHEET 1 OF 1  
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SHEET 1 OF 1  
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**KALAS FALLS PHASE I**  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

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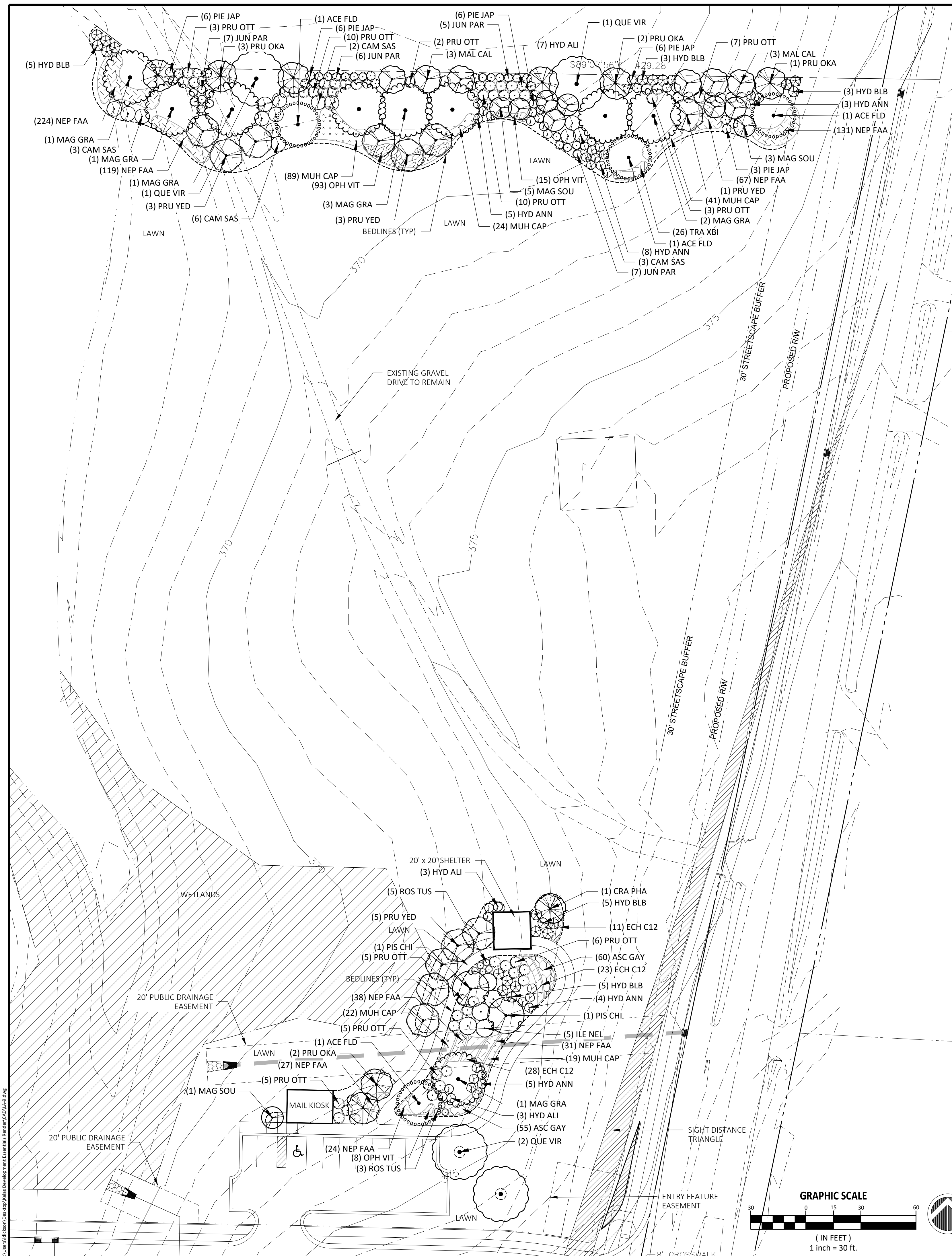
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**GENERAL LANDSCAPE NOTES**

- All plant material shall conform with the standards set forth by the American Association of Nurserymen, American Standard for Nursery Stock, ANSI Z60.1 and the written specifications.
- Locate all existing utilities prior to installation of plant material. Notify owner of any discrepancies between field conditions and those shown on the plan.
- Contractor engaged in landscape installation shall be a landscape contractor registered in the state.
- Tree protection fence shall be maintained on site until all site work and the final site inspection is completed. The fencing shall be removed prior to the certificate of occupancy (CO) inspection is scheduled.
- Verification of total quantities as shown on the plant list shall be the responsibility of the contractor and the total quantities shall be as shown on the plan.
- All plant groupings shall be mulched as one bed. 4" Pine Bark Mulch shall be used around all plantings.
- Apply pre-emergent herbicide to all new planting beds at manufacturer's recommended rate prior to installation of mulch.
- Establish positive drainage in all planting beds and away from buildings.
- Do not install plant material in impervious soils, (i.e. holes which, when filled with water, do not completely drain within two hours.) See specifications for topsoil requirements.
- Lawn areas shall be seeded with Bermuda 95% coverage (based on a per square yard sample) shall be attained prior to final inspection. See detail sheet for rates and specifications for additional information.
- The tree protection fence shall be maintained on the site until all site work is completed and the final site inspection prior to the certificate of occupancy (CO) is scheduled. The fencing shall be removed prior to final site inspection for the CO.
- Landscape sub-contractor (under GC contract) shall be responsible for watering all plants and lawn areas at his cost from his own water source including during periods of drought until the plants and lawn meet final completion. Plant materials or areas of grass which perish shall be re-established by the contractor at no expense to the owner.
- General contractor shall be responsible for keeping all equipment & subcontractors away from seeded areas. If damage occurs, through no fault of the owner, areas shall be regraded and reseeded immediately at no additional cost to the owner. Contractor shall water and maintain those areas until they are at 95% coverage at final completion.
- General lawn areas shall be seeded with Bermuda. All 3:1 slopes shall be stabilized with biodegradable erosion control matting.
- Install permanent seeding along all roadside ditches and channels within construction limits of project. See erosion control plans for additional information.
- Areas damaged from plant relocation or other activities of landscape contractor to be reseeded and established at no additional cost to the owner.
- Mulch and no-mow mixes shall be replenished as needed, especially after heavy rain events. If no-mow mix germinates at a rate of less than 90%, other species shall be removed and the area re-seeded.
- Plants shall be watered at least 2 times per week unless soil is moist based on core sample or moisture meter reading. Water more frequently during establishment. Landscape Contractor (under GC contract) shall be responsible for watering all plants at his cost from his own water source including during periods of drought until the plants and lawn meet final completion. Plant materials which perish shall be re-established by the contractor at no expense to the owner.
- Remove (either manually or with pesticide treatment) all weeds in mulch areas, plant beds, tree rings, and hardscape areas; including but not limited to nutsedge, grasses, invasive plants, and any non-desirable plant material. This treatment shall occur monthly until the end of the warranty / maintenance period.
- Mulch line smooth continuous curves.
- All trees not within a plant bed to be treated with a 6-ft diameter mulch ring (typ).

**TOPSOIL / PLANTING MIX MINIMUM REQUIREMENTS:**

- TOPSOIL/PLANTING MIX SHOULD BE NATURAL, FERTILE, AGRICULTURAL SOIL CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH. IT SHOULD BE UNIFORM COMPOSITION THROUGHOUT, WITH ADMIXTURE OF SUBSOIL. IT SHOULD BE FREE OF STONES, LUMPS, LIVE PLANTS AND THEIR ROOTS, STICKS AND OTHER EXTRANEANOUS MATTER. TOPSOIL SHOULD NOT BE USED WHILE IN A FROZEN OR MUDDY CONDITION.
- TOPSOIL/PLANTING MIX SHALL HAVE AN ACIDITY RANGE OF PH 5.5-7.0 AND THE FOLLOWING COMPOSITION:
 

CLAY (RED CLAY, WELL PULVERIZED)	MINIMUM 10%; MAXIMUM 35%
COMPOST*/ORGANIC	MINIMUM 5%; MAXIMUM 10%
SILT	MINIMUM 30%; MAXIMUM 50%
COARSE SAND (FREE OF ROCKS, 0.5 TO 1.0 MM F)	MINIMUM 30%; MAXIMUM 45%
- ORGANIC MATERIAL SUCH AS SAWDUST OR LEAF MOLD THAT HAS COMPLETED THE DECOMPOSITION PROCESS
- RECOMMENDATIONS:
- ALL PLANTING AREAS SHOULD BE TESTED FOR PROPER DRAINAGE. DRAINAGE SHOULD BE CORRECTED AS NECESSARY TO INSURE PROPER TREE GROWTH AND SURVIVAL. THE FOLLOWING LEVEL OF NUTRIENT ELEMENTS IS RECOMMENDED FOR PROPER GROWTH:
 

CALCIUM	55 - 80%
MAGNESIUM	10 - 30%
POTASSIUM	5 - 8%

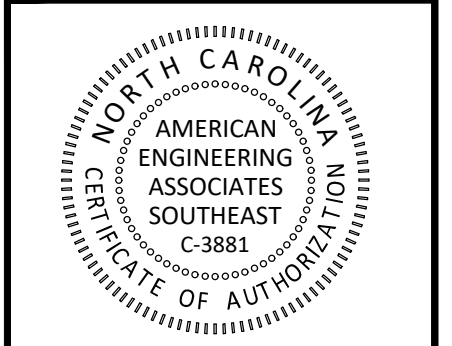
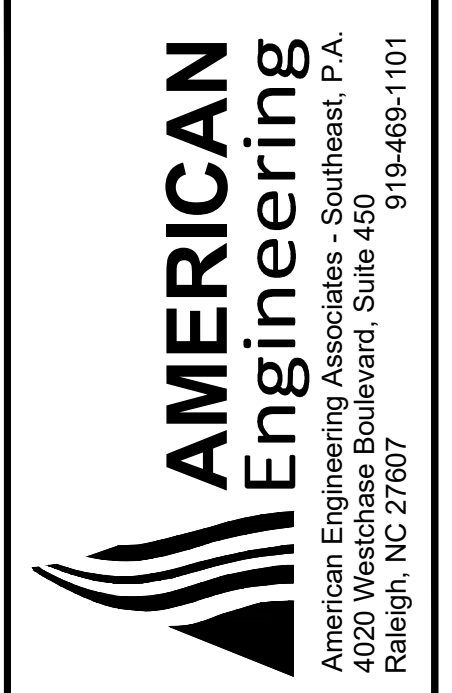
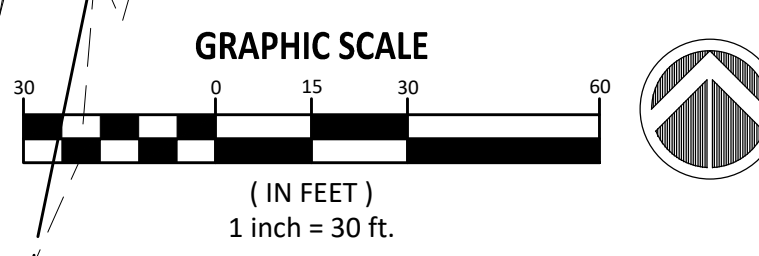
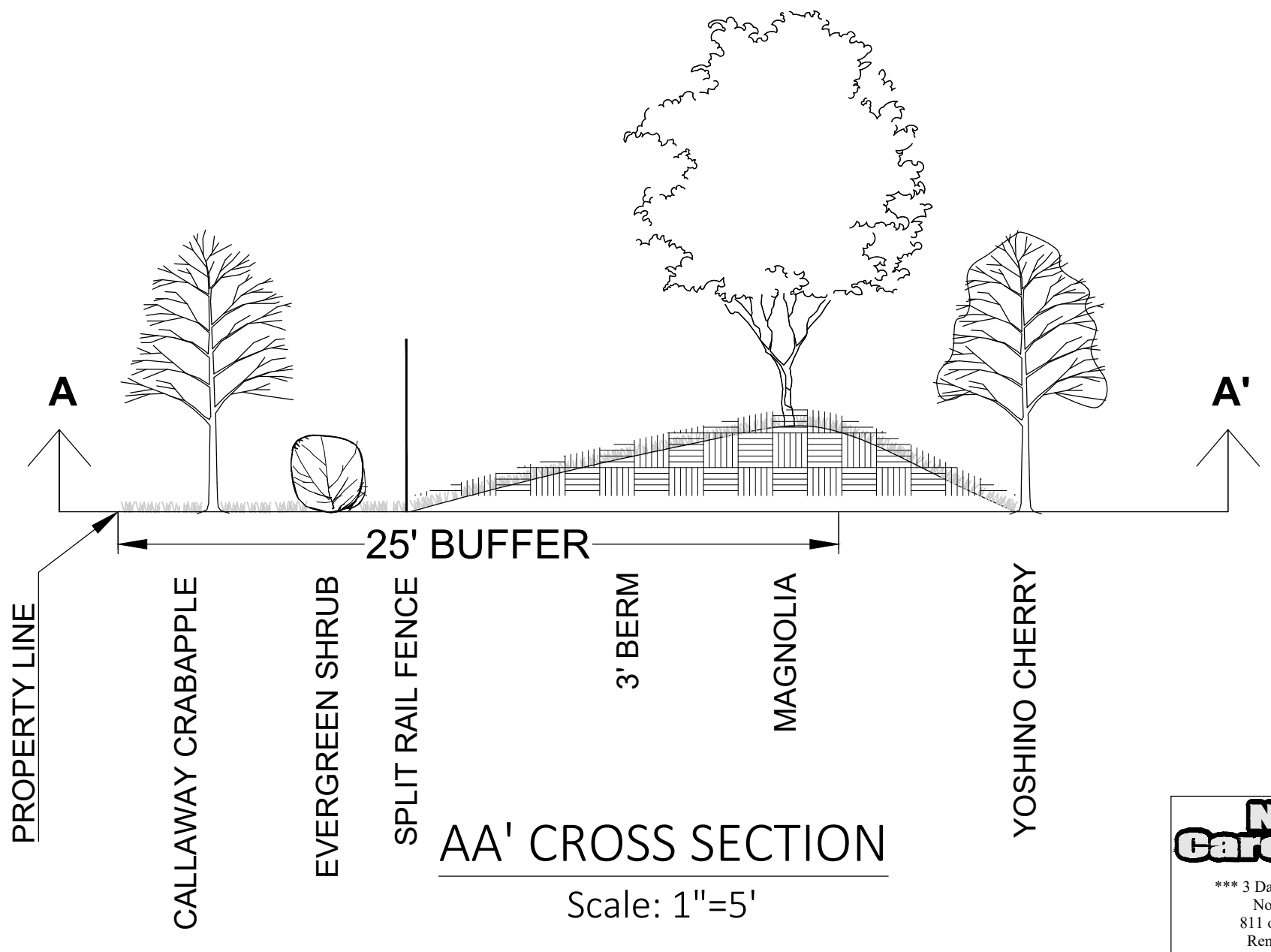
**NOTE:**  
MRS. GAYLE STALLINGS HAS APPROVED THE PLANTING DESIGN AND PLANT LIST

**PLANT SCHEDULE**

CODE	BOTANICAL / COMMON NAME	CONT	CAL	QTY	REMARKS
<b>TREES</b>					
ACE FLD	Acer floridanum / Southern Sugar Maple	3" Cal.	B&B	4	Single Straight Leader
CRA PHA	Crataegus phaenopyrum / Washington Hawthorn	---	---	1	
MAG GRA	Magnolia grandiflora 'Brackens Brown Beauty' / Bracken's Beauty Southern Magnolia	3" Cal.	B&B	9	Single Straight Leader
MAG SOU	Magnolia x soulangeana / Saucer Magnolia	2" Cal.	B&B	9	Single Straight Leader
MAL CAL	Malus x 'Callaway' / Callaway Crabapple	2" Cal.	B&B	6	Single Straight Leader
PIS CHI	Pistacia chinensis / Chinese Pistache	2" Cal.	B&B	2	Single Straight Leader
PRU OKA	Prunus x 'Okame' / Okame Flowering Cherry	2.5" Cal.	B&B	8	Single Straight Leader
PRU YED	Prunus x yedoensis 'Shidare Yoshino' / Yoshino Cherry	2.5" Cal.	B&B	12	Single Straight Leader
QUE VIR	Quercus virginiana / Southern Live Oak	3" Cal.	B&B	4	Single Straight Leader
<b>SHRUBS</b>					
CAM SAS	Camellia sasanqua / Sasanqua Camellia	5 gal.	Pot	14	Fully Rooted
HYD ANN	Hydrangea arborescens 'Annabelle' / Annabelle Hydrangea	3 gal.	Pot	25	Fully Rooted
HYD ALI	Hydrangea quercifolia 'Alice' / Alice Oakleaf Hydrangea	3 gal.	Pot	13	Fully Rooted
HYD BLB	Hydrangea serrata 'Blue Billow' / Blue Billow Hydrangea	3 gal.	Pot	21	Fully Rooted
ILE NEL	Ilex x 'Nellie R. Stevens' / Nellie R. Stevens Holly	5 gal.	Pot	5	Fully Rooted
JUN PAR	Juniperus chinensis 'Parsonii' / Parsoni Juniper	3 gal.	Pot	25	Fully Rooted
PIE JAP	Pieris japonica / Japanese Pieris	3 gal.	Pot	27	Fully Rooted
PRU OTT	Prunus laurocerasus 'Otto Luyken' / Otto Luyken English Laurel	3 gal.	Pot	56	Fully Rooted
ROS TUS	Rosmarinus officinalis 'Tuscan Blue' / Tuscan Blue Rosemary	1 gal.	Pot	8	Fully Rooted

**PLANT SCHEDULE**

CODE	BOTANICAL / COMMON NAME	SPACING	CONTAINER	SPACING	QTY	REMARKS
<b>GROUND COVERS</b>						
ASC GAY	Asclepias tuberosa 'Gay Butterflies' / Gay Butterflies Butterfly Milkweed	4" pot		18" o.c.	115	Fully Rooted
ECH C12	Echinacea x 'Cheyenne Spirit' / Cheyenne Spirit Coneflower	1 gal.		24" o.c.	62	Fully Rooted
MUH CAP	Muhlenbergia capillaris / Pink Muhly Grass	1 gal.	Pot	24" o.c.	195	Fully Rooted
NEP FAA	Nepeta x faassenii / Catmint	1 gal.	Pot	18" o.c.	661	Fully Rooted
OPH VIT	Ophiopogon jaburan 'Vittatus' / White Clumping Lilyturf	1 gal.	Pot	24" o.c.	116	Fully Rooted
TRA XBI	Tradescantia x 'Bilberry Ice' / Bilberry Ice Spiderwort	1 gal.	Pot	24" o.c.	26	Fully Rooted



PRELIMINARY

FOR INFORMATION, ONLY

NO.	DATE	REVISION

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KALAS FALLS AMENITY AREA & STALLINGS BERM  
1832 ROLLESVILLE ROAD  
WAKE COUNTY, NC

JOB NUMBER: R19100  
CHECKED BY: BMF  
DRAWN BY:  
DATE: 04-14-21  
SHEET TITLE: PLANTING PLAN  
SHEET NO.:

